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AN ALLIED WASTE COMPANY

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JUN 15 2010

UTAH DIVISION OF
SOLID & HAZARDOUS WASTE

2010.02029

June 14, 2010

Scott T. Anderson, Director
Department of Environmental Quality
Division of Solid and Hazardous
195 North 1950 West
Salt Lake City, UT 84114-4880

Subject: Wasatch Regional Landfill, Inc. Request for Permit Modification, Addition of an Evaporation Pond

Dear Mr. Anderson;

Please find enclosed a Design Report for construction and operations of an Evaporation pond for Wasatch Regional Landfill, Inc. (WRL). WRL has included in the document: construction plans, CQA plan, and an Operations and Maintenance Plan.

Wasatch Regional understands approval of a permit modification is required for construction of an evaporation pond. The pond may be used for storage and evaporation of both liquid waste and leachate.

Wasatch Regional thanks the DSHW in advance for a timely review and approval of the permit modification. If you have any questions please feel free to contact Jake Russell at 530-272-2448 or me at 435-888-4418 (22).

Sincerely,

Darin Olson
Republic Services, Mountain Area
Environmental Manager

cc: Vem Loveless, Director Tooele County Engineering

1111 West Highway 123 P.O. Box 69 East Carbon, UT 84520 Toll Free (800) 444-4451 Tel. (435) 888-4451 Fax (435) 888-5557

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Environment & Sustainability

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2010.02029

Wasatch Regional Landfill, Inc.

Wasatch Regional Landfill Liquid Waste Pond Design Report June 2, 2010

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Contents

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1 Introduction

The purpose of this Design Report is to present the design and construction rationale for the Liquid Waste Pond expansion at the Wasatch Regional Landfill (WRL) located in Tooele County, Utah This Design Report was prepared by Ausenco Vector on behalf of Wasatch Regional Landfill Inc for submittal to the Utah Division of Solid and Hazardous Waste (UDSHW) for approval

The proposed project will enable the WRL to comply with existing state water quality regulations and to better manage liquid waste in order to protect water quality The work includes the construction of a new liquid waste pond which includes a geosynthetic bottom liner system

2 Site Description

The general site location, shown in Drawing G01 in Appendix A, is roughly 6 miles north of Interstate 80 in Tooele County in an unpopulated section of the county, north/northwest of Grantsville, Utah and south of Rowley, Utah

There are no residences within several miles of the WRL site and the adjacent parcels are all vacant and undeveloped A rail spur and County Road 128 on the east side of the parcel are the only uses adjacent to the site The site is approximately 1,969 acres in size, which is sufficient to handle incoming waste projected over several decades An additional 640 acres of adjacent Utah State School and Institutional Trust Lands Administration (SITLA) property is planned to accommodate the long-term build out scenano for the landfill The initial permitting process for the landfill site will cover the 1 969 acres under a ground lease with SITLA Permitting of the adjacent property is scheduled when the public sector demand for expansion occurs at the WRL site

3 Project Description

The project consists of building a double lined pond for the storage and evaporation of liquid waste The lined area of the pond will cover approximately 1 1 acres, and the total construction area is approximately 2 1 acres The pond will be located to the north of the future limits of Phase 3 of the landfill and to the east of an existing dirt road as shown in Drawing G02 of the Construction Drawings

Access to the pond will be via the existing dirt road, until permanent access roads are constructed when Phase 3 is built From the existing road, a 30-foot wide all-weather road will run along the eastern edge of the pond for disposal truck access A 20-foot wide all-weather road will run around the other 3 sides of the pond The pond will have four areas along the eastern edge for discharge into the pond The locations of the discharge areas will be clearly marked and will consist of an extra 10-foot wide layer of 60mil geomembrane

The pond will be lined with two layers of 60-mil double-sided textured HDPE geomembrane Two geocomposite strips running north-south and east-west, will help vent potential gas and air from underneath the pond This will help mitigate the potential for uplift or bubbling of the liner

The double-lined pond is superior to a single-lined pond in that it provides leak detection and collection with the secondary liner A leak detection sump located at the middle of the eastern edge will serve as the point of compliance for the pond The leak detection sump will be approximately 5-feet by 5-feet It will be approximately one foot deep and filled with gravel which

will be wrapped in two layers of 8oz geotextile Leakage into the sump will be collected and monitored through an 8-inch diameter HDPE riser pipe The pond will be monitored for possible leakage on a regular basis as outlined in the Operations & Monitoring Plan provided in Appendix D

4 Liner System Design

The Technical Specifications related to the construction activities for the proposed pond have been prepared by Ausenco Vector (see Appendix B) In general, these construction activities will entail the following

- Clearing, grubbing and stripping the construction area in preparation for the earthworks
- Performing the necessary excavation and engineered fill to the desired grades of the proposed ponds
- Preparing and compacting the subgrade for the pond in preparation for placement of geosynthetic materials
- Constructing the subgrade venting system with the appropriate pipe and geocomposite materials
- Installing the liner system, which will consist of two layers of 60-mil double-sided textured HDPE geomembrane

In addition, Ausenco Vector prepared a drawing plan set for the construction of the new pond including a title sheet, a site plan, a grading plan and control coordinates for the pond, as well as details A reduced set of Construction Plans are included with this package (see Appendix A)

As shown in the Construction Plans, the new pond will be graded to an inside crest elevation of 4,280 feet above msl The proposed pond will be built with 2H 1V side slopes that will transition to the floor of the lagoon The floor of the new pond will be graded to flow towards the center at 2% and east side of the pond at 2% The low point of the pond will be at the leak detection sump which is approximately at the 4269ft elevation

5 Design Considerations

The pond was designed to have a capacity of approximately 1 6 million gallons with 2ft of freeboard, and an ultimate capacity of 2 3 million gallons at the pond crest The nearest weather station that collected evaporation data was located approximately 30 miles from the landfill The area receives an average of approximately 13 inches of precipitation a year and can expect to see an average of 67 inches of pan evaporation The pan evaporation can be conservatively estimated to equal approximately 47 inches of lake evaporation This gives the pond a net average evaporation capacity of approximately 34 inches a year With the ponds surface area of approximately 1 1 acres, will give the pond the ability to evaporate approximately 1 0 million gallons of liquid during an average year

6 Construction Schedule

Construction is tentatively planned to start in the fall of 2010 and is anticipated to only take approximately a month to complete To ensure that proper construction techniques and procedures are used and that the project is built in accordance with the project Drawings and Specifications a Construction Quality Assurance (CQA) Plan has been prepared and is attached in Appendix C

7 Conclusions and Limitations

The assumptions presented in this letter and the enclosed attachments are based upon our experience at the site, past field investigations, a review of previous reports, and a review of other literature If the project scope of work changes from that described herein, our analyses should be reviewed and modified, if necessary

This report was prepared in accordance with generally accepted soils, geosynthetics, and foundation engineering practices applicable at the time the report was prepared and for the project location Ausenco Vector makes no other warranties, either expressed or implied, as to the professional advice provided under the terms of this agreement, and as presented in this report Our recommendations consist of professional opinions and conclusions, based on the scope of work outlined herein and that adequate follow-up engineering, field investigations and construction quality assurance are provided, as necessary, to verify that the assumptions used in the design are accurate and the work is constructed properly It is recommended that Ausenco Vector be provided the opportunity for a general review of any final construction documents prepared by other consultants or contractors m order that our recommendations may be properly interpreted and implemented

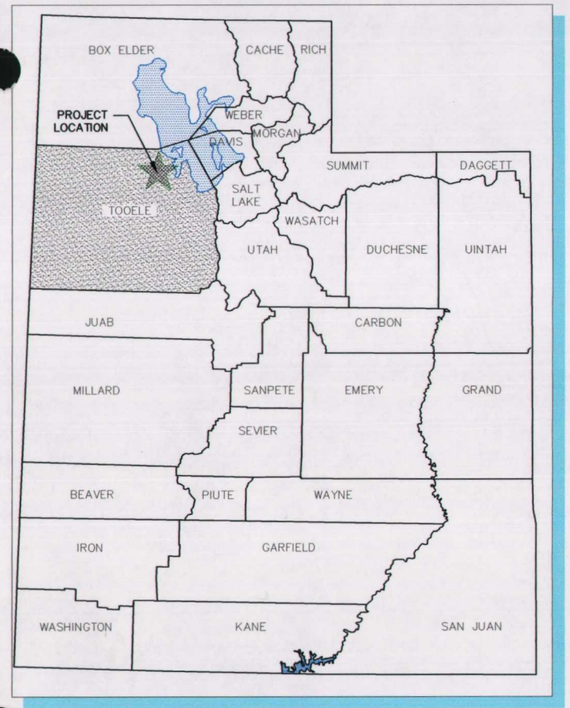
Ausenco Vector

Appendix A – Construction Drawings

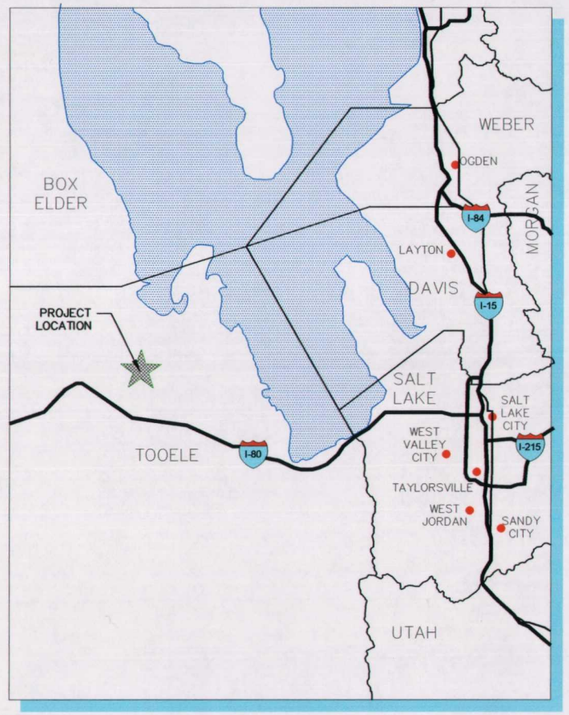
WASATCH REGIONAL LANDFILL
LIQUID WASTE
POND DESIGN
CONSTRUCTION DRAWINGS

PREPARED FOR:

WASATCH REGIONAL LANDFILL, INC.



UTAH COUNTIES

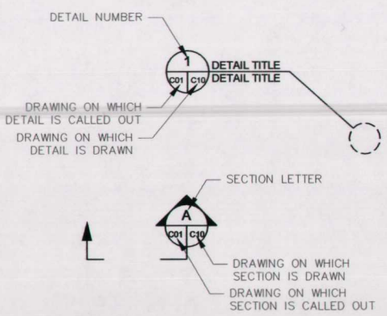


REGIONAL MAP

ABBREVIATIONS

Ø	DIAMETER	OC	ON CENTER
FT	FEET	oz	OUNCE
HDPE	HIGH DENSITY POLYETHYLENE	NTS	NOT TO SCALE
MAX	MAXIMUM	%	PERCENT
MIN	MINIMUM	TYP	TYPICAL

SYMBOLS



VICINITY MAP

DRAWING INDEX

DRAWING NUMBER	TITLE AND DESCRIPTION	LATEST REVISION NUMBER	LATEST REVISION DATE
GENERAL			
G01	TITLE PAGE	0	06/02/10
G02	EXISTING SITE CONDITIONS	0	06/02/10
CIVIL			
C01	SUBGRADE AND LINER PLAN	0	06/02/10
C02–C09	RESERVED		
C10	DETAILS	0	06/02/10
C11	DETAILS	0	06/02/10

NOTES:
1. PIPE BENDS AND GEOSYNTHETICS ARE SHOWN NTS.

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APPROVED BY: JVR

REGISTERED PROFESSIONAL ENGINEER
5881834-2202
JACOB V. RUSSELL
State of Utah

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WASATCH REGIONAL LANDFILL, INC.

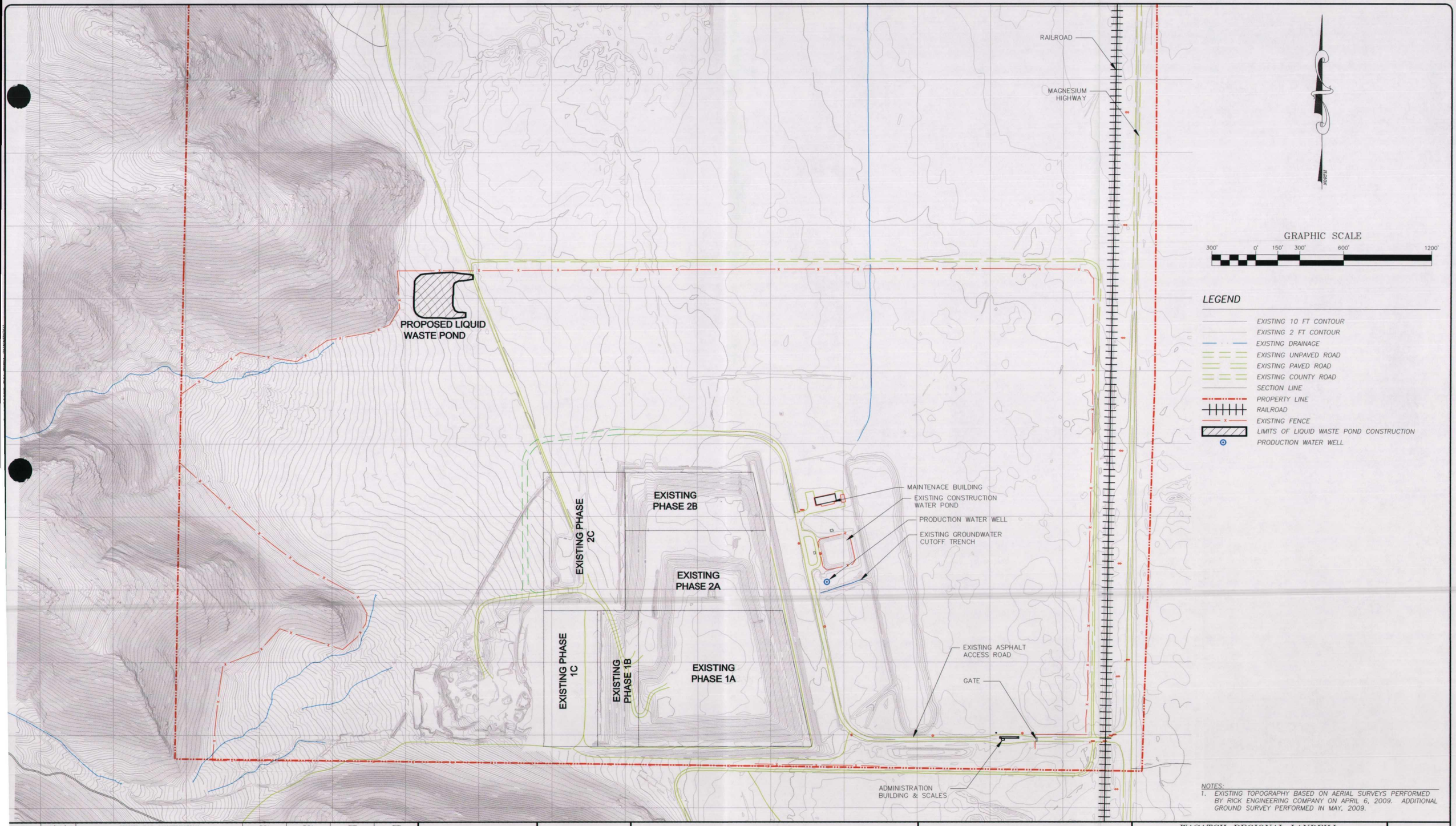
WASATCH REGIONAL LANDFILL
LIQUID WASTE
POND DESIGN
TOOELE COUNTY, UTAH

TITLE PAGE

DRAWING NO. G01

PROJECT NO. 061204.20

ISSUED FOR CONSTRUCTION



NORTH

GRAPHIC SCALE

300' 0' 150' 300' 600' 1200'

LEGEND

- EXISTING 10 FT CONTOUR
- EXISTING 2 FT CONTOUR
- EXISTING DRAINAGE
- EXISTING UNPAVED ROAD
- EXISTING PAVED ROAD
- EXISTING COUNTY ROAD
- SECTION LINE
- PROPERTY LINE
- RAILROAD
- EXISTING FENCE
- LIMITS OF LIQUID WASTE POND CONSTRUCTION
- PRODUCTION WATER WELL

NOTES:
1. EXISTING TOPOGRAPHY BASED ON AERIAL SURVEYS PERFORMED BY RICK ENGINEERING COMPANY ON APRIL 6, 2009. ADDITIONAL GROUND SURVEY PERFORMED IN MAY, 2009.

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WASATCH REGIONAL LANDFILL, INC.

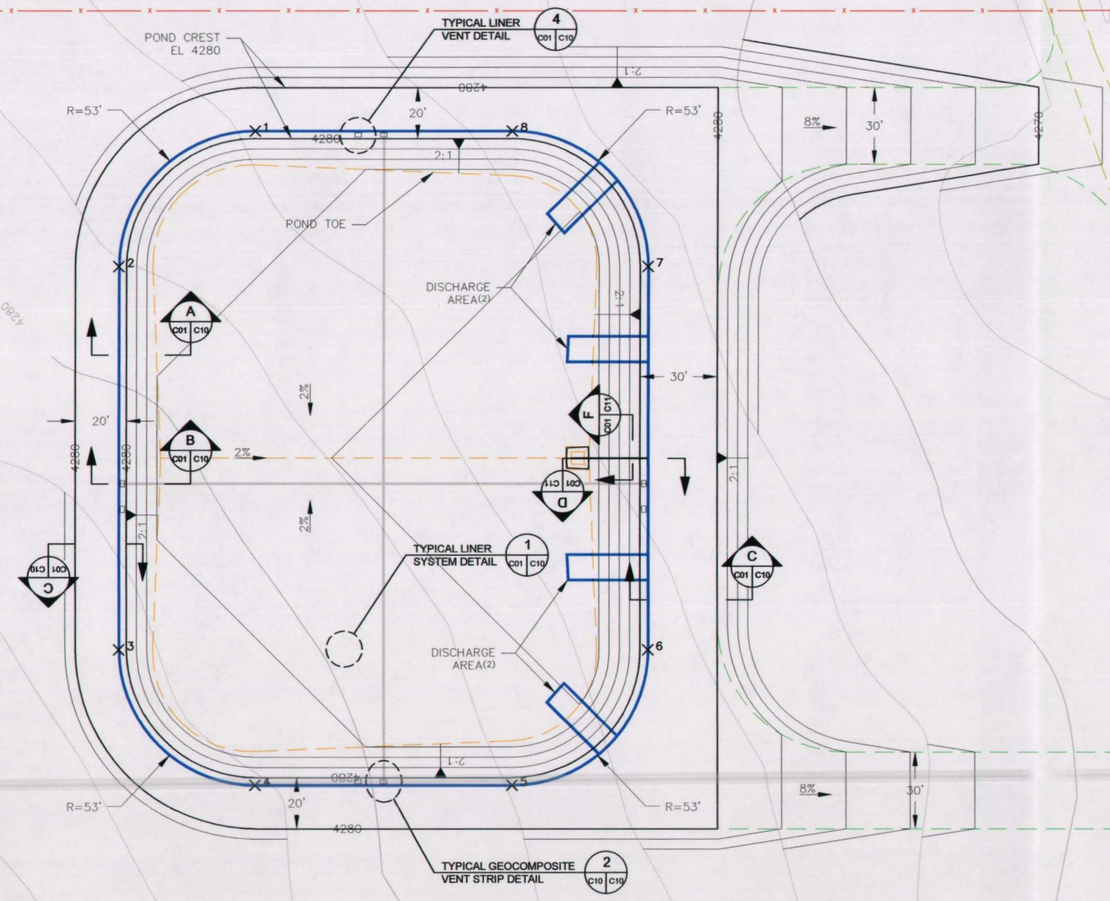
WASATCH REGIONAL LANDFILL
LIQUID WASTE POND DESIGN
TOOELE COUNTY, UTAH

EXISTING SITE CONDITIONS

DRAWING NO. G02

PROJECT NO. 061204.20

ISSUED FOR CONSTRUCTION



GRAPHIC SCALE

30' 0' 15' 30' 60' 120'

LEGEND

- 4250 — EXISTING 10 FT CONTOUR
- EXISTING 2 FT CONTOUR
- 4250 — PROPOSED 10 FT SUBGRADE CONTOUR
- PROPOSED 2 FT SUBGRADE CONTOUR
- PROPOSED HINGELINE
- EXISTING ROAD
- PROPOSED ROAD
- LINER LIMITS
- GEOCOMPOSITE STRIP
- LINER VENT

QUANTITIES

VOLUME OF CUT = 7,400 CY
VOLUME OF FILL = 6,800 CY

LINER LIMIT CONSTRUCTION COORDINATES			
NO.	NORTHING	EASTING	DESCRIPTION
1	7482142.97	1294634.79	LINER LIMIT
2	7482089.97	1294581.79	LINER LIMIT
3	7481939.97	1294581.79	LINER LIMIT
4	7481886.97	1294634.79	LINER LIMIT
5	7481886.97	1294734.79	LINER LIMIT
6	7481939.97	1294787.79	LINER LIMIT
7	7482089.97	1294787.79	LINER LIMIT
8	7482142.97	1294734.79	LINER LIMIT

NOTES:
1. EXISTING TOPOGRAPHY BASED ON AERIAL SURVEYS PERFORMED BY RICK ENGINEERING COMPANY ON APRIL 6, 2009. ADDITIONAL GROUND SURVEY PERFORMED IN MAY, 2009.
2. DISCHARGE AREA SHALL BE CONSTRUCTED OUT OF 10 FT WIDE LAYER OF 60mil HDPE GEOMEMBRANE EXTRUSION WELDED ALL AROUND. EXTEND GEOMEMBRANE A MINIMUM OF 10 FT PAST THE TOE OF SLOPE.

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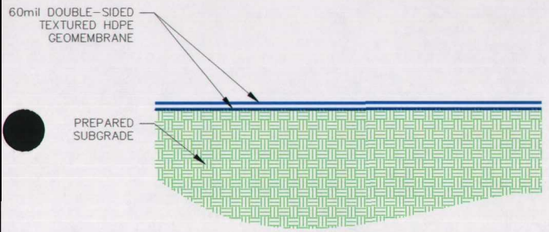
TOOELE COUNTY, UTAH

SUBGRADE AND LINER PLAN

DRAWING NO. C01
PROJECT NO. 061204.20

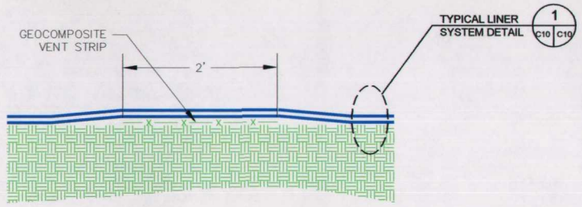
ISSUED FOR CONSTRUCTION



TYPICAL LINER SYSTEM

DETAIL 1 (C02 | C10)

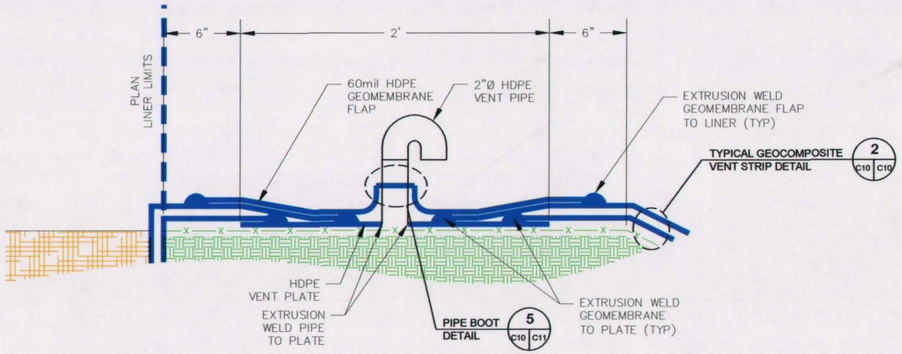
1" = 1'



TYPICAL GEOCOMPOSITE VENT STRIP

DETAIL 2 (C01 | C10)

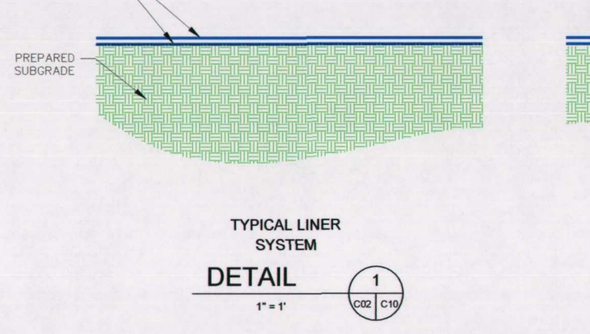
1" = 1'



GEOCOMPOSITE VENT

DETAIL 3 (C10 | C10)

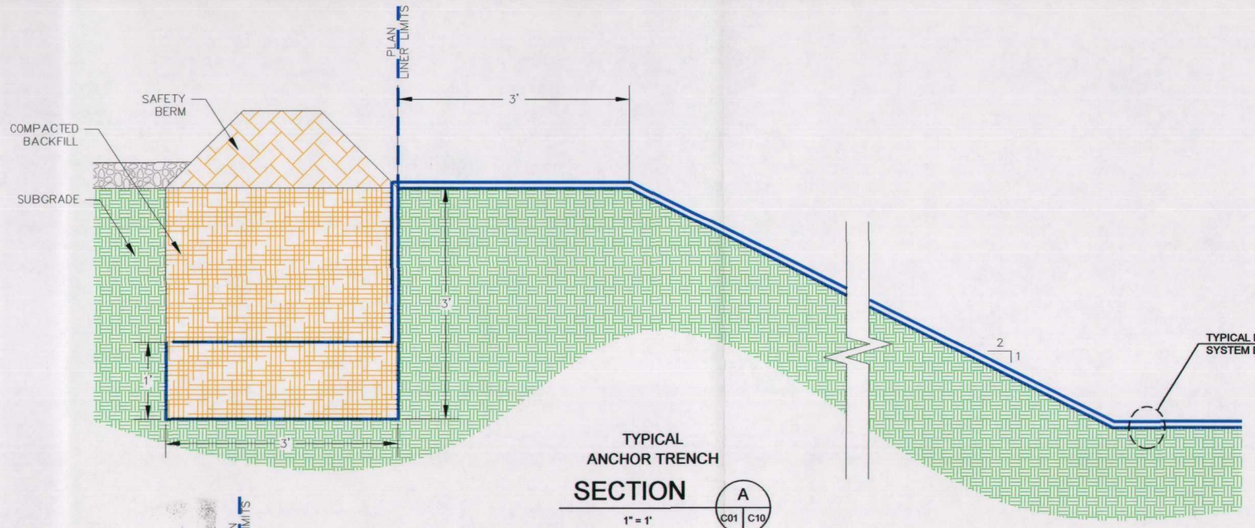
1" = 6"



TYPICAL LINER VENT

DETAIL 4 (C01 | C10)

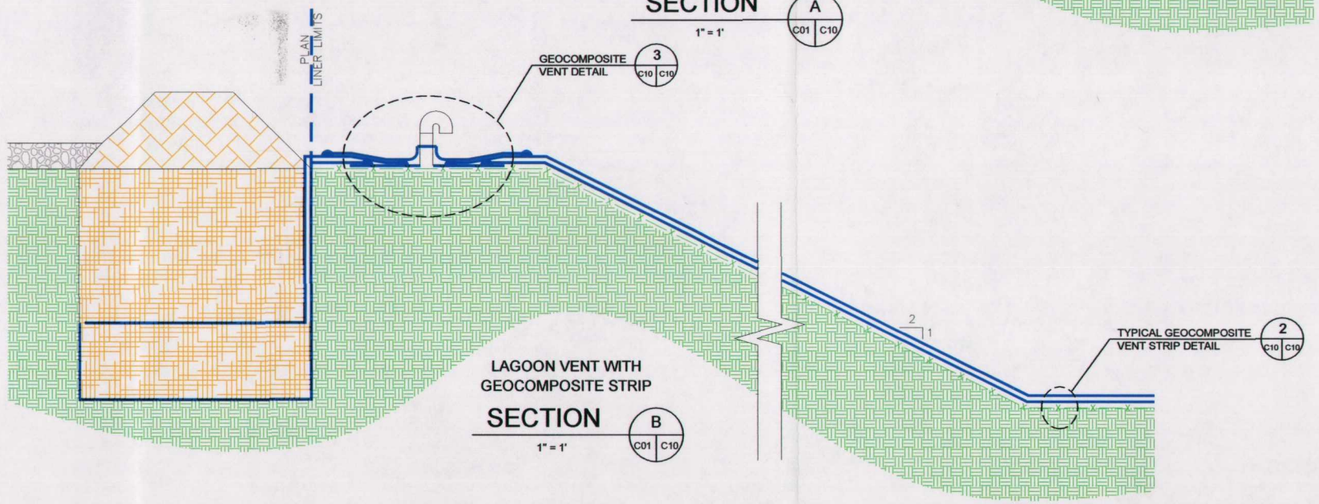
NTS



TYPICAL ANCHOR TRENCH

SECTION A (C01 | C10)

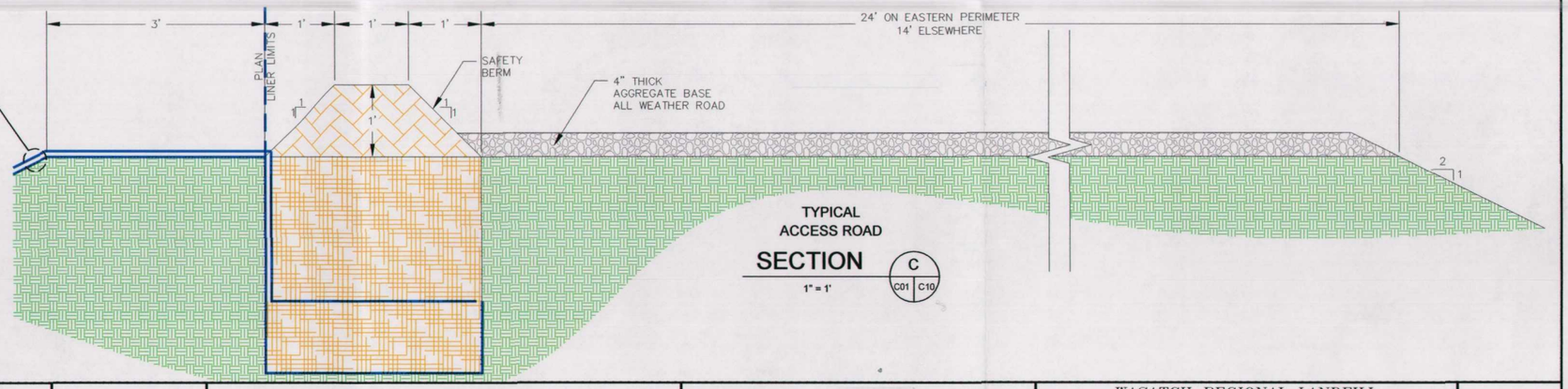
1" = 1'



LAGOON VENT WITH GEOCOMPOSITE STRIP

SECTION B (C01 | C10)

1" = 1'



TYPICAL ACCESS ROAD

SECTION C (C01 | C10)

1" = 1'

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WASATCH REGIONAL LANDFILL, INC.

WASATCH REGIONAL LANDFILL
LIQUID WASTE POND DESIGN
TOOELE COUNTY, UTAH

DETAILS

DRAWING NO. C10

PROJECT NO. 061204.20

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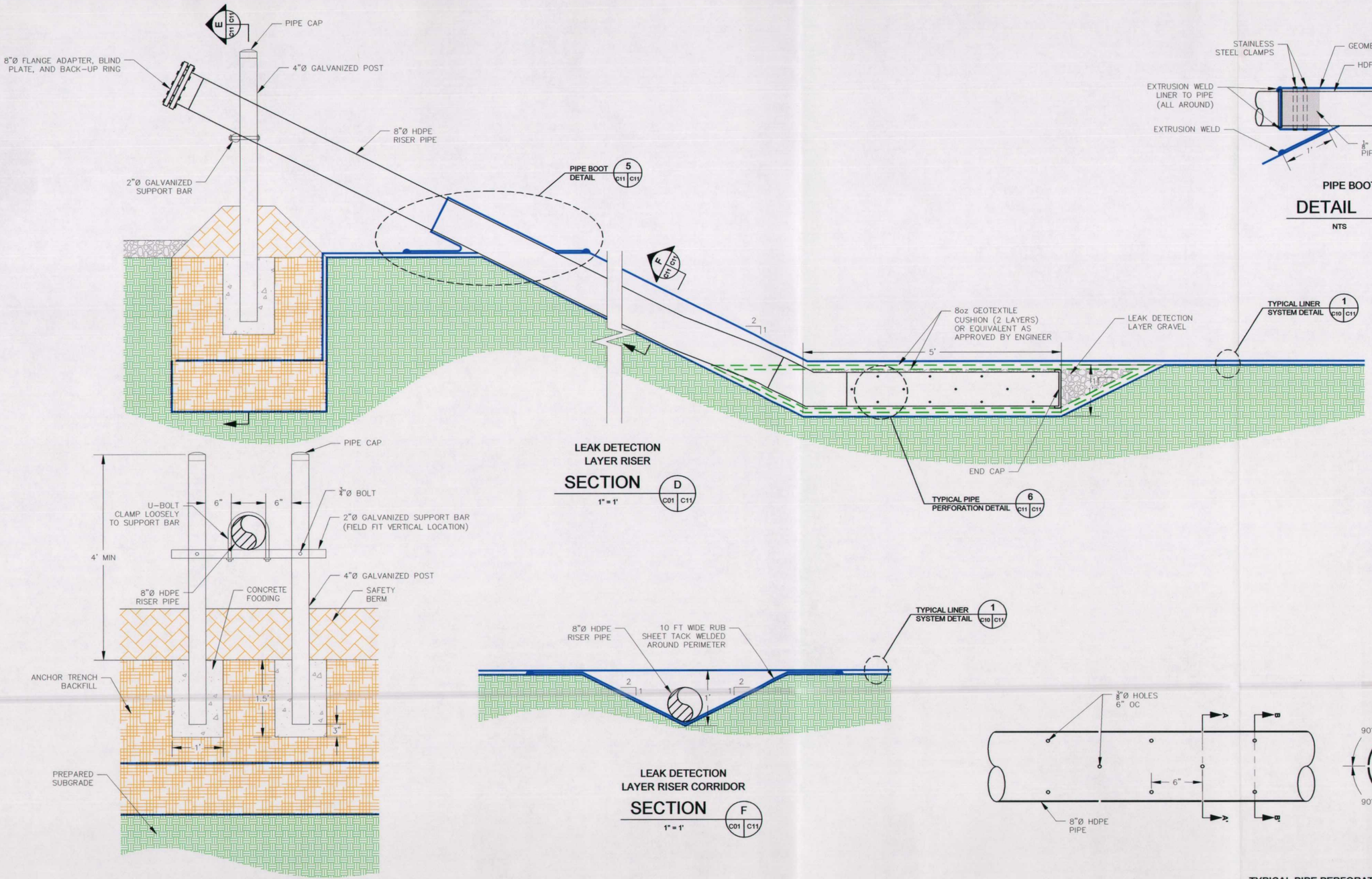

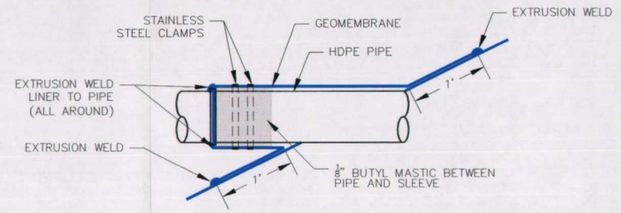

PIPE BOOT

DETAIL 4 (C10 | C10)

NTS

LEAK DETECTION LAYER RISER

SECTION D (C01 | C11)

1" = 1'

LEAK DETECTION LAYER RISER CORRIDOR

SECTION F (C01 | C11)

1" = 1'

SUMP RISER ANCHOR TRENCH AND SUPPORT POST

SECTION E (C11 | C11)

1" = 1'

TYPICAL PIPE PERFORATION

DETAIL 6 (C11 | C11)

1" = 6"

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TOOELE COUNTY, UTAH

DETAILS

DRAWING NO. C11

PROJECT NO. 061204.20

ISSUED FOR CONSTRUCTION

Ausenco Vector

Appendix B – Bidding Requirements and Specifications

BIDDING REQUIREMENTS

Document 00003

TABLE OF CONTENTS

END OF DOCUMENT

Document 00004

LIST OF DRAWINGS

Drawing Title	Drawing Number
Title Page	G01
Existing Site Conditions	G02
Subgrade and Liner Plan	C01
Details	C10
Details	C11

END OF DOCUMENT

Document 00020

INVITATION TO BID

You are invited to prepare a bid for the construction of the Liquid Waste Pond at the Wasatch Regional Landfill Tooele County Utah The scope of work for this project which is described in the enclosed bid package, generally consists of excavation and subgrade preparation engineered fill installation of HDPE geomembrane liner geocomposite strips leak detection system and placement of road base

It is expected that the work for this project will commence on or about September 13, 2010 The work is to be completed by November 19 2010 (i e contractor will complete all work necessary for the CQA consultant to complete the liner system certification report) or sixty (60) days from Notice to Proceed whichever is later However greater consideration will be given to the contractor that proposes an accelerated yet reasonable schedule

Please prepare your bid in accordance with the Bid Package The completed Bid Form, Price List and bid submittals must be submitted and delivered no later than August 30, 2010, by 5 00 p m , to the following

Dann Olson
1111 West Hwy 123
East Carbon Utah 84520
Phone No (435) 888-4418 ex 22
Fax No (435) 888-0407

Upon review and evaluation of the submitted bids we will notify the successful bidder and issue a Notice-to-Proceed Wasatch Regional Landfill, Inc reserves the right to reject any or all bids It is the contractor's responsibility to have read and understood all terms and conditions stated in this document The successful bidder will be required to sign a contractual agreement as shown in this document Any modifications and/or exceptions to the agreement as shown must be brought to our attention before submittal of the bid Questions must be submitted to the ENGINEER in writing before 5 00 p m August 23 2010 (see Instructions To Bidders)

A Pre-Bid meeting has been scheduled to familiarize bidders with the site and to address questions concerning the project at 1 00 pm on August 16, 2010 at the facility located at 8833 North Rowley Road North Skull Valley, Utah 84029 Attendance is mandatory in order to submit a bid

If you have any questions or comments concerning this project or to confirm your attendance at the Pre-Bid meeting please call Dann Olson at (435) 888-4418 ex 22 Your interest in this work is appreciated and we look forward to receiving your company s bid

END OF DOCUMENT

Document 00100

INSTRUCTIONS TO BIDDERS

PART 1 - RELATED DOCUMENTS

1 01 Document 00020 Invitation to Bid

1 02 Document 00200 Information Available to Bidders

1 03 Document 00300 Bid Form

1 04 Supplements to Bid Form identified in Document 00300 Bid Form

1 05 Document 00500 Agreement

1 06 Document 00700 General Conditions

I 07 Document 00800 Supplementary Conditions

PART 2 DEFINITIONS

2 01 Definitions set forth in Document 00700 General Conditions and in other Contract Documents are applicable to the Bid Documents

2 02 *Addenda* Written or graphic instruments issued prior to the opening of Bids which clarify modify correct, or change the Bid Documents

2 03 *Alternate Bid* The monetary amount stated in the Bid for an addition to the Base Bid if the corresponding addition to the Work, as described in the Bid Documents is accepted Each Alternate Bid shall include the cost of effects on adjacent or related components and the Contractor's overhead and profit

2 04 *Bid Documents* The Project Manual and Drawings including Addenda, plus Invitation to Bid, Instructions to Bidders Information Available to Bidders and Supplements to Bid Form identified in Document 00300 Bid Form

2 05 *Bidder* A person or entity who submits a bid

2 06 *Bid, Offer Bidding* The act of submitting a complete and properly signed offer m accordance with these Instructions to Bidders

2 07 *Bid Price* The monetary amount for performing the Work as identified by the Bidder in Document 00300 Bid Form which amount could be a Lump Sum Bid a Total Unit Price Bid or a combination of both

2 08 *Base Bid* The monetary amount stated in the Bid for which the Bidder offers to perform the Work described in the Bid Documents as the base to which Work may be added for amounts stated in Alternate Bids

2 09 *Total Unit Price Bid* The total monetary amount carried forward to Document 00300 Bid Form, from Document 00405 Schedule of Unit Price Work which contains prices per unit of measurement for materials equipment, or services

PART 3 EXAMINATION OF BID DOCUMENTS AND SITE

3 01 A complete set of the Bid Documents must be used in preparing Bids Wasatch Regional Landfill Inc assumes no responsibility for errors or misinterpretations resulting from the use of an incomplete set of Bid Documents On receipt of Bid Documents verify that documents are legible and complete Compare contents of the Project Manual with Document 00003 Table of Contents and compare drawings with Documents 00004 List of Drawings Notify the Wasatch Regional Landfill Inc Project Manager if the documents as issued are incomplete

3 02 Bid Documents are made available only for the purpose of obtaining offers for this Project Receipt or purchase of Bid Documents does not grant a license for other purposes

3 03 It is the responsibility of the Bidder before submitting bid to

1 carefully study the Bid Documents and compare them with each other

2 examine the local conditions that may affect cost, progress performance or furnishing of the Work

3 consider federal state and local laws and regulations that may affect cost, progress performance or furnishing of the Work

4 examine the site and site conditions

5 examine the Information Available to Bidders listed in Document 00200

6 make additional site investigations at Bidder's own expense to the extent Bidder deems

necessary to ascertain the extent of surface and subsurface conditions and variations thereof

7 study and carefully correlate Bidder's personal observations with requirements of the Bid Documents and

8 report at once to the Wasatch Regional Landfill Inc Project Manager any errors inconsistencies or ambiguities discovered

3 04 On request in advance Wasatch Regional Landfill Inc at its own discretion will provide each Bidder access to the site (as appropriate) to conduct such explorations and tests as each Bidder deems necessary for submission of a Bid A representative of Wasatch Regional Landfill Inc must be present during such explorations or testing Bidder shall fill all holes clean up and restore the site to its former conditions upon completion of such explorations

3 05 Failure to perform such explorations and tests during the bid period shall not relieve Bidder from responsibility for investigations interpretations and proper use of available information in preparation of Bidder's proposal

3 06 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Part 3 of Instructions to Bidders that without exception the Bid is premised upon performing and furnishing the Work required by the Bid Documents and such means methods techniques sequences or procedures of construction as may be indicated in or required by the Bid Documents and that the Bid Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work

PART 4 QUESTIONS AND INTERPRETATIONS

4 01 Direct questions to Wasatch Regional Landfill Inc Project Manager

4 02 Verbal discussions and answers are not binding Requests from Bidders for clarifications and interpretations of content of documents must be in writing, received not less than 5 days before the date set for receipt of Bids

4 03 The reply by the Wasatch Regional Landfill Inc Project Manager will be by Addendum

4 04 If there is a discrepancy in the specifications and the plans or between the specifications and the plans and the Bidder has failed to notify the Wasatch Regional Landfill Inc Project Manager of the discrepancy prior to bidding so that an Addendum could be issued Bidder shall use the larger number highest cost, best quality and most restrictive

PART 5 ADDENDA

5 01 Addenda issued to Bidding Requirements are applicable only during the bidding period Addenda to the Post Bid Procedures are applicable only through the issuance of the Notice to Proceed Any Addenda issued to Contract Forms Conditions of the Contract, Specifications, or Drawings become a part of the Contract Documents Include resultant costs in the Bid Price

5 02 Addenda will be issued by the Wasatch Regional Landfill Inc Project Manager Copies of each Addendum will be telecopied mailed, e mailed, or delivered to all parties recorded by Wasatch Regional Landfill Inc as having received the Bid Documents

5 03 Each Bidder shall ascertain prior to submitting a Bid that the Bidder has received all Addenda issued The Bidder shall acknowledge their receipt in the place indicated in Document 00300 Bid Form

PART 6 SUBSTITUTIONS OF MATERIALS/EQUIPMENT

6 01 For products specified by naming one or more manufacturers or when individual specification sections require a specific construction method or the use of specific construction equipment, with provision for consideration of substitutions (or equal) as provided in Paragraph 3 6 of Document 00700 General Conditions the general contract Bidder may submit requests for pre bid approval of substitutions if received by the Wasatch Regional Landfill Inc Project Manager no later than 10 days before the date set for receipt of Bids

6 02 The request for substitution shall provide complete information to determine acceptability of such products in accordance with the provisions of Paragraph 3 6 of Document 00700 General Conditions

6 03 The Wasatch Regional Landfill Inc Project Manager will consider the request for substitution and, if approved will issue an Addendum to Bidders of record The Bidder shall base his Bid only on substitutions approved in Addenda. Voluntary substitutions by the Bidder not listed in an Addendum will not be allowed

6 04 Bidders shall include in their bids the costs of provisions for substitutions approved by Addenda, as stated in Subparagraph 3 6 4 of Document 00700 General Conditions

PART 7 SUBCONTRACTORS SUPPLIERS AND OTHERS

7 01 Bidders may be requested to identify Subcontractors Suppliers or other persons or entities proposed for certain portions of the Work, to be submitted as an Attachment to the Bid Form Such requests will be made in Part 5 of Document 00300 Bid Form Wasatch

Regional Landfill Inc may consider such information in the evaluation of the bids

7 02 The Bidder's receipt of a Notice of Intent to Award does not constitute approval by Wasatch Regional Landfill Inc of the Bidder's proposed subcontractors and suppliers Wasatch Regional Landfill Inc reserves the right to object to a proposed Subcontractor or Supplier for reasonable cause The procedures for subcontractor and supplier approval are stipulated in Paragraph 5 2 of Document 00700 General Conditions

PART 8 BID COMPLETION AND SUBMISSION

8 01 The Bid Form is Document 00300

8 02 Complete all blanks on the Bid Form in ink or by typewriter

8 03 Bids by corporations must be executed in the corporate name by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign) and attested by the secretary or an assistant secretary

8 04 Bids by partnerships must be executed in the partnership name and signed by a partner whose title must appear under the signature

8 05 All names must be typed or printed below the signature

8 06 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form

8 07 Bid submittals shall include all Supplements and Attachment specified in Parts 4 and 5 of Document 00300 Bid Form

8 08 Each page of Document 00405 Schedule of Unit Price Work shall be initialed by the Bidder signing Document 00300 Bid Form

8 09 Bid all requested Alternate Bids If no change is required from the Base Bid, enter 'No Change

8 10 Bids shall be submitted at the time and place indicated in Document 00020 Invitation to Bid and shall be enclosed in an opaque sealed envelope marked with the Project Title and Site Name The name and address of the Bidder must be clearly identified If the Bid is sent through the mail or other delivery system the sealed envelope shall be enclosed in a separate envelope with the notation BID ENCLOSED on the face of it

8 11 Bidders shall be solely responsible for the delivery of their bids in die manner and time prescribed in Document 00020 Invitation to Bid

8 12 All costs and expenses incurred by the Bidder that are associated with preparation of the Bid shall be paid by and be the sole responsibility of the Bidder

8 13 The Bidders shall attach the following required sections to their bid for submittal

00415 Bidders Proposed Construction Schedule
00420 Bidders Proposed Subcontractors and Suppliers
00425 Bidders Proposed Key Personnel

PART 9 MODIFICATION AND WITHDRAWAL OF BIDS

9 01 Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids

PART 10 BIDS TO REMAIN SUBJECT TO ACCEPTANCE

10 01 All Bids will remain subject to acceptance for the period of time indicated in the Bid Form after the day of the Bid opening but Wasatch Regional Landfill Inc may in its sole discretion release any Bid, prior to that date

PART 11 EVALUATION OF BIDS

11 01 Wasatch Regional Landfill Inc reserves the right to reject any and all Bids to waive any and all informalities and to negotiate contract terms with the Successful Bidder Wasatch Regional Landfill Inc reserves the right to disregard all nonconforming non responsive unbalanced or conditional Bids Also Wasatch Regional Landfill Inc reserves the right to reject the Bid of any Bidder if Wasatch Regional Landfill Inc believes that it would not be in the best interest of the Project to make an award to that Bidder whether because the Bid is not responsive or the Bidder is unqualified or of doubtful financial ability or fails to meet any other standard or criteria of Wasatch Regional Landfill Inc

11 02 Discrepancies in the multiplication of units of Work and unit prices will be resolved in favor of the unit prices Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum Discrepancies between words and figures will be resolved in favor of words

11 03 In evaluating Bids Wasatch Regional Landfill Inc will consider the qualifications of the Bidders whether or not the Bids comply with the prescribed requirements and such alternates unit prices and other data, as may be requested in the Bid Form

11 04 Wasatch Regional Landfill Inc may consider operating cost, maintenance requirements performance data, and guarantees of material or equipment proposed for incorporation in the Work

11 05 Wasatch Regional Landfill Inc may conduct such investigations as Wasatch Regional Landfill Inc deems necessary to assist in the evaluation of any Bid and to establish the responsibility qualifications and financial ability of Bidders proposed Subcontractors Suppliers and other persons or organizations to perform and furnish the Work in accordance with the Project Manual to Wasatch Regional Landfill Inc s satisfaction within the prescribed time

11 06 If the contract is to be awarded it will be awarded to the Bidder whose evaluation by Wasatch Regional Landfill Inc indicates to Wasatch Regional Landfill Inc that the award will be in the best interest of the Project

11 07 If the contract is to be awarded, Wasatch Regional Landfill Inc will provide the Successful Bidder a Notice to Proceed

END OF DOCUMENT

Document 00200

INFORMATION AVAILABLE TO BIDDERS

1 0 AVAILABILITY

A The information described in this document is available for viewing at the Wasatch Regional Landfill office located at 1111 West Highway 123, East Carbon Utah 84520

2 0 BIDDER RESPONSIBILITIES

A Wasatch Regional Landfill Inc or the Architect/Engineer shall not be responsible for the accuracy or completeness of such information Responsibility for the accuracy of the information lies with the preparer

B Bidder shall have full responsibility for the interpretation of the information for his bidding and construction purposes

C Bidder shall have full responsibility for reviewing and verifying such information for locating underground facilities or existing structures shown or indicated in the Contract Documents and for coordination of the Work with the owners of such underground facilities or existing structures during construction

3 0 REPORTS

A Project Manual for Wasatch Regional Landfill Liquid Waste Pond June 2010 prepared by Ausenco Vector

B Construction Quality Assurance Plan June 2010 prepared by Ausenco Vector

C Municipal Solid Waste Landfill Permit Modification Design Engineering Report December 2004 prepared by Hansen Allen & Luce Inc

END OF DOCUMENT

Document 00300

BID FORM

To Mr Dann Olson
1111 West Hwy 123
East Carbon Utah 84520

Project Liquid Waste Pond Construction
Wasatch Regional landfill

Bid Due Date _____, 2010 prior to 5 00 p m

Bidder _____

PART 1 **OFFER**

Having examined the place of the Work and ail matters referred to in the Bid Documents and the Contract Documents for the named Project we the undersigned hereby offer to enter into a Contract to perform the Work for the Bid Price of

_____

_____ Dollars ($ _____)

Lump Sum Contract If the Bid is for a single Lump Sum Contract, the Bid Price above is the Total Stipulated Price offered including Cash Allowances if any

Unit Price or Combination Lump Sum and the Unit Price Contract If the Bid is for a Unit Price Contract or a combination of Lump Sum and Unit Price Contract the Bid Price above is the Base Bid tabulated in Document 00405 - Schedule of Unit Price Work including Cash Allowances if any

Cash Allowances All Cash Allowances listed in Document 00405 - Schedule of Unit Price Work and described in the Bid Documents are included in the Bid Price

Changes in Contract Price Due to Variations in Actual Quantities For items quoted in the supplement to this Bid Document 00405 - Schedule of Unit Price Work the Total Unit Price Bid is based in whole or in part on the Unit Prices for the quantity of units for each of the items listed The Contract Price is subject to change due to variation in the actual quantity of each unit in the completed Work in accordance with the Contract Documents

Alternate Bids We will perform Alternate Bid Work as listed in Document 00405 - Schedule of Unit Price Work and described in the Bid Documents for an amount added to the Bid Price for each Alternate Bid that is accepted by Wasatch Regional Landfill Inc

Period for Bid Acceptance This offer shall be open to acceptance and is irrevocable for 90 days from the Bid date That penod may be extended by mutual written agreement of Wasatch Regional Landfill Inc and the Bidder or as needed to fulfill requirements for Agreement submittals as discussed in Document 00450 - Post-Bid Procedures After the Bid Acceptance Penod the Bidder may withdraw without penalty if no mutual agreement can be reached

PART 2 CONTRACT TIME

If this offer is accepted we shall meet the following schedule

- Notice to Proceed - _____
- Start Work on or before - _____
- Substantial Completion of Excavation - _____
- Substantial Completion of Geomembrane Liner - _____
- Substantial Completion of Entire Project - _____
- Final Completion of Entire Project - _____

The Contractor shall perform the contract work between the hours of 6 AM and 6 PM Monday through Saturday No work shall be performed on Sundays without the written permission of Wasatch Regional Landfill Inc

The Contractor's schedule submitted with his bid shall account for and identify the total number of working days assumed to develop his bid for each month of work The Contractor's schedule shall account for the anticipated normal weather condition

PART 3 ADDENDA

The following Addenda have been received The modifications to the Bid Documents noted therein have been considered and all costs relating thereto are included in the Bid Price

Addendum No _____ dated _____ Addendum No _____ dated _____

Addendum No _____ dated _____ Addendum No _____ dated _____

Addendum No _____ dated _____ Addendum No _____ dated _____

PART 4 SUPPLEMENT TO THIS BID

If the Bid is for a Unit Price Contract or a combination of Lump Sum and Unit Price Contract Document 00405 - Schedule of Unit Price Work constitutes a Supplement to the Bid and is included as an integral part of this Bid

PART 5 ATTACHMENTS TO THIS BID

The following required Attachments to this Bid provide information which may be used by Wasatch Regional Landfill Inc for the evaluation of the Bid

[ ] 00415 Bidder s Proposed Construction Schedule

[ ] 00420 Bidder's Proposed Subcontractors and Suppliers

[ ] 00425 Bidder's Proposed Key Personnel

PART 6 PENALTY FOR DELAY

We agree that time is of the essence and that we will pay Wasatch Regional Landfill Inc delay penalties in accordance with Paragraph 9 11 1 of the General Conditions and 9 11 2 of the Supplementary Conditions if we fail to meet any of the Substantial Completion or Final Completion dates specified in the Contract Times on this Bid Form

PART 7 SIGNATURES

Bidder _____

(Please print or type the full name of your proprietorship partnership corporation or joint venture *)

By _____

(Signature of sole proprietor partner or authorized officer of corporation)

Name _____

(Please print or type name) (Title)

Address _____

(Business Address of Bidder print or type)

Telephone _____

(Print or type telephone number)

* *If the Bid is a joint venture add additional Bid form signature sheets for each member of the joint venture*

END OF DOCUMENT

Document 00405

SCHEDULE OF UNIT PRICE WORK

This Document consisting of 2 pages and Document 405A constitutes a Supplement to Document 00300 - Bid Form for Liquid Waste Pond Construction Wasatch Regional Landfill When a Contract is awarded this Document becomes a supplement to Document 00500 - Agreement between Wasatch Regional Landfill Inc and Contractor Refer to Section 01025 for detail on bid items

BASE UNIT PRICES FOR

ITEM NO	ITEM DESCRIPTION	UNIT	QTY	UNIT PRICE IN FIGURES	TOTAL IN FIGURES
LIQUID WAS POND CONSTRUCTION					
Mining - 3rd Party Earthwork (1610 021)					
1	Mobilization/Demobilization	Lump Sum	1		
2	Excavation/Stockpiling	Cubic Yard	7 400		
3	Liner Subgrade Preparation	Acre	1 13		
4	Liner Termination (Section A)	Lineal Feet	850		
	Mining - 3rd Party Earthwork (1610 021) Subtotal				
Mining – Miscellaneous (1610 022)					
5	Surveying and As-built Drawings	Lump sum	1		
6	NPDES	Lump sum	1		
	Mining – Miscellaneous (1610 022) Subtotal				
Geosynthetics (1610 025)					
7	60-mil Double-sided Textured Geomembrane	Square Foot	112 400	By Others	Owner Supplied
8	Geocomposite	Square Foot	1 000	By Others	Owner Supplied
9	Geotextile Supply	Square Foot	100	By Others	Owner Supplied
	Geosynthetics (1610 025) Subtotal				
Cell Specific 3rd Party Earthwork (1610 024)					
10	Placement and Compaction of Engineered Fill	Cubic Yard	6 900		
11	Leak Detection Sump	Lump Sum	1		
12	4 Thick Untreated Base Course Supply	Cubic Yard	400		
13	4 Thick Untreated Base Course Placement	Cubic Yard	400		

TOTAL UNIT PRICE BID = $_____

* The quantities shown herein for excavation and engineered fill are for bidding purposes only Actual quantities will be determined by the pre- and post-construction surveys conducted by the CONTRACTOR

END OF DOCUMENT

UNIT PRICE LIST

The following unit price list should represent all components of the work and will be utilized as the basis for determining compensation for change orders delays, or unspecified extra work items that may arise during the work The cost indicated for each item will be the total cost of the compensation and will include labor supervision overheads profit and any other costs Standby will be incurred by COMPANY only if the CONTRACTOR will be unable to work a forty (40) hour week because of COMPANY caused delays COMPANY will not pay standby time because of inclement weather Rates for the work performed will be identified in the Agreement Standby rates cover ownership costs only costs for profit labor and maintenance have been deducted Standby for rental will be presented by CONTRACTOR for review and approval by COMPANY only those items identified as rental equipment in the original bid or subsequently approved for project use in writing by COMPANY will be considered CONTRACTOR to provide formula to calculate standby costs from unit costs to apply for equipment not shown

Required	Equipment and Model	Unit Cost ($/hour)	Stand-by Rate ($/hour)
	Labor (by Category)		
	Field Supenntendent		
	Equipment Operator		

Note List all of the equipment required for the execution of this job

Document 00415

BIDDER'S PROPOSED CONSTRUCTION SCHEDULE

1 0 This Document 00415 constitutes an Attachment to Document 00300 - Bid Form

2 0 The information provided by the Bidder in this Document will be one component that Wasatch Regional Landfill Inc may use to evaluate the Bid

3 0 Bidder proposes the following construction schedule for the major items of the Work A construction schedule outline in the format of Bidder's choice is attached

ACTIVITY	START DATE	COMPLETION DATE

4 0 Upon award of the Contract the successful Bidder will be required to prepare and submit a construction schedule for the Work to the detail required by the Wasatch Regional Landfill Inc Project Manager in accordance with Paragraph 3 11 1 of Document 00700 - General Conditions

END OF DOCUMENT

Document 00420

BIDDER'S PROPOSED SUBCONTRACTORS AND SUPPLIERS

1 0 This Document 00420 constitutes an Attachment to Document 00300 - Bid Form

2 0 The information provided by the Bidder in this Document will be one component that Wasatch Regional Landfill Inc may use to evaluate the Bid

3 0 Bidder proposes to use the following Subcontractors and Suppliers

DESCRIPTION OF WORK	SUBCONTRACTOR	SUPPLIER

END OF DOCUMENT

Document 00425

BIDDER'S PROPOSED KEY PERSONNEL

1 0 This Document 00425 constitutes an Attachment to Document 00300 - Bid Form

2 0 The information provided by the Bidder in this Document will be one component that Wasatch Regional Landfill Inc may use to evaluate the Bid

3 0 Bidder proposes to use the following key personnel to manage the Work Attach resumes for each person

Project Manager	Location of Office	Telephone No
Project Engineer (if applicable)	Location of Office	Telephone No
Project Business Manager	Location of Office	Telephone No
General Supenntendent	Location of Office	Telephone No

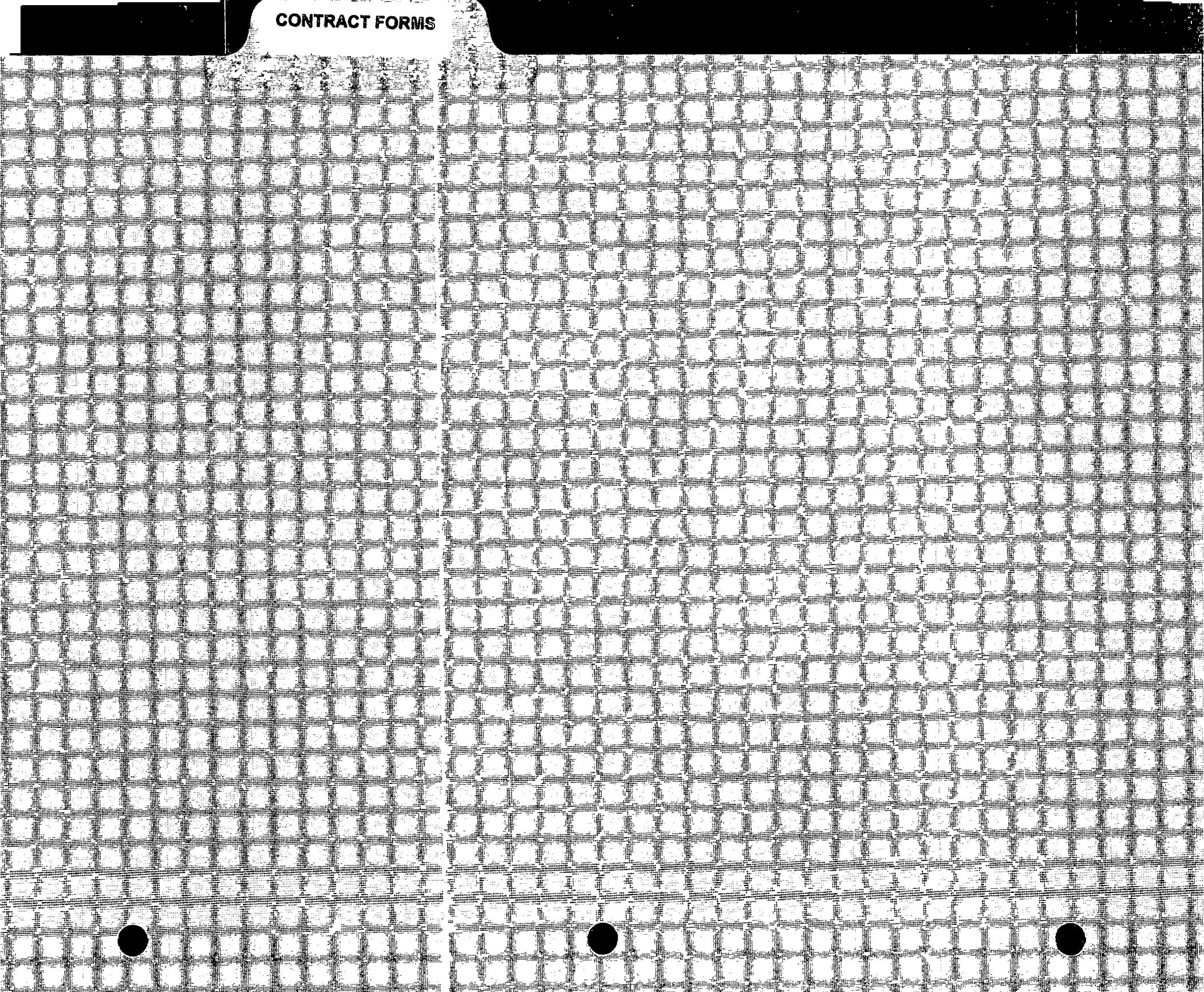
Indicate who will be the primary contact at the site and in the home office

* Home Office Contact

** Site Contact

If titles shown above are not appropnate adjust as needed

END OF DOCUMENT



Document 00500

AGREEMENT BETWEEN WASATCH REGIONAL LANDFILL, INC
AND CONTRACTOR

AGREEMENT
for
Contracting Services

- between -

_____, Inc
(Hereinafter the "COMPANY")

- and -

_____
(Hereinafter "CONTRACTOR")

Dated

_____, 2010

AGREEMENT No _____

WHEREAS the COMPANY requires the performance of certain contracting services (provisions of labor) as hereinafter described relating to its solid waste disposal business and operations and

WHEREAS CONTRACTOR is prepared and able to perform the professional contracting services required by the COMPANY

THEREFORE in consideration of the mutual promises hereinafter set out the COMPANY and CONTRACTOR agree as follows

1 SERVICES

1 1 Scope of Work
CONTRACTOR shall in accordance with the requirements of this Agreement perform and provide the contracting services described in the Scope of Work attached as Exhibit 'A" hereto CONTRACTOR shall complete the performance and provision of the said services on or before or as specified in Exhibit ' D" hereto

1 2 Conduct of Services
CONTRACTOR represents and warrants to the COMPANY that CONTRACTOR is competent to perform and provide the services required by this Agreement and the CONTRACTOR has the necessary permits licenses and qualifications to perform such services CONTRACTOR shall exercise skill care and diligence in the performance and provision of the services required by this Agreement CONTRACTOR shall perform the services promptly and in full conformity with all requirements of this Agreement and shall carry out its obligations under this Agreement in accordance with customarily accepted practices In the event that CONTRACTOR should fail to comply with any of the foregoing requirements or standards CONTRACTOR shall perform at its own

costs and without reimbursement from the COMPANY the services necessary to correct deficiencies in the services or work which are so caused

1 3 Changes
if during the term of this Agreement the limits of the project are revised or other changes are made in the scope or character of the work or services to be performed the CONTRACTOR shall make the necessary changes only after receiving a written order from the COMPANY The Agreement amount and Agreement schedule may only be changed by the proper execution of a CHANGE ORDER which must be signed by authorized representatives of the COMPANY and the CONTRACTOR The change order should be substantially similar in format to that shown in Exhibit F'

1 4 Authorization
The COMPANY will not accept any responsibility whatsoever for work or services performed for which there is no specific proper written authorization For the purposes of this Agreement the authorized representatives for the Agreement are as follows

COMPANY	CONTRACTOR
_____	_____
_____	_____
_____	_____

2 PRICE and PAYMENT

2 1 Payment
Payment shall be made to the CONTRACTOR by one of the following methods

2 1(a) UNIT PRICE CONTRACT
Subject to the terms and provisions of this Agreement and in consideration of the performance of the services and work to the satisfaction of the COMPANY the total amount the COMPANY shall pay to CONTRACTOR under this Agreement shall be the Total Construction Cost The Total Construction Cost shall be the sum of the Subtotal Costs for each Area of Work on the Bid Worksheet attached to the Agreement as Exhibit B The Subtotal Cost for each Area of Work shall be determined by multiplying the Actual Quantity by the Unit Cost for such Area of Work as set forth in the Bid Worksheet The Actual Quantity will be determined by a physical survey performed by the CONTRACTOR and reviewed by the COMPANY or by the independent construction quality assurance (CQA) consultant retained by the COMPANY If the parties dispute the actual quantities determined by the CQA consultant the parties will mutually retain an independent consultant agreed to by both parties who will determine the actual quantities to be used in the calculation of the payment The actual quantities determined by the independent consultant shall be final and binding on the parties

Payment for work or materials for which no price is contained in the contract shall be the estimated cost of direct labor shown in the Schedule of Unit Prices (Exhibit 'C) materials (shown on invoice) and the use of equipment shown in the Schedule of Unit Prices (Exhibit C)

It is estimated that the total price for the services to be performed and provided by CONTRACTOR hereunder (including all expenses fees and reimbursables) shall be the sum of $_____, which sum is referred to as the "Limitation of Expenditure "

The COMPANY s obligation to CONTRACTOR for the services performed and provided under this Agreement shall not exceed the Limitation of Expenditure unless otherwise authonzed in writing by the COMPANY CONTRACTOR shall not be obliged to perform or provide any work or services which would cause the Limitation of Expenditure to be exceeded unless an increase is so authorized If at any time CONTRACTOR considers that the Limitation of Expenditure may be exceeded it shall promptly notify the COMPANY so that the COMPANY may in its sole discretion authonze an increase

2 2 Invoices

Invoices will be submitted by the contractor to the company for payment on a monthly basis The invoices will be a fixed cost every month for the duration of the project until project completion The monthly charge will be calculated by taking the total estimated project cost ($_____) and dividing the cost by the total scheduled months for project duration (_____ months) for a monthly payment that equals ($_____ per month) The monthly invoices will be a fixed amount and shall include itemized quantities and associated costs with back up documentation in support of the quantities and the amounts completed to date The final payment will be based on actual as-built quantities The total paid to date will be subtracted from the total project cost to determine the final payment

2 3 Taxes

The rates or prices stated in this Agreement have been prepared by CONTRACTOR and make provision for an amount relating to taxes or duties payable with respect to this Agreement Accordingly any taxes duties or other similar amounts eligible shall be payable by and are the sole responsibility of CONTRACTOR

2 4 Timing of Payment

The CONTRACTOR shall receive payment for amounts invoiced 60 days from the date the invoice is approved by the Project Manager and input to the COMPANY s Payables system

3 GENERAL PROVISIONS

3 1 Successors and Assigns

The Agreement shall ensure to the benefit of and be binding upon the parties hereto and their lawful heirs executors administrators successors and permitted assigns The Agreement shall not be assigned in whole or in part by CONTRACTOR without the prior written consent of the COMPANY and any assignment made without such consent is void and of no effect No assignment of the Agreement shall relieve CONTRACTOR from any obligation under the Agreement or impose any liability upon the COMPANY

3 2 Excusable Delay

Time is of the essence for the Agreement Any delay by CONTRACTOR in performing its obligations under the Agreement which is caused by an event beyond the control of the CONTRACTOR and which could not have been avoided by the CONTRACTOR without incurring unreasonable cost through the use of work-around plans including alternative sources or other means constitutes an Excusable Delay Events may include but are not restricted to acts of God acts of local provincial or federal governments fires floods epidemics quarantine restrictions embargoes and unusually severe weather CONTRACTOR shall give notice to the COMPANY immediately after the occurrence of the event that causes the Excusable Delay The notice shall state the cause and circumstances of the delay and indicate the portion of the work affected by the delay Unless CONTRACTOR complies with the notice requirements set forth above any delay that would otherwise constitute an Excusable Delay shall be deemed not to be an Excusable Delay

3 3 Indemnity and Limitation of Liability

CONTRACTOR shall indemnify and save harmless the COMPANY its employees and officers from and against all claims losses damages costs, expenses actions and other proceedings made sustained brought, prosecuted threatened to be brought or prosecuted in any manner based upon occasioned by or attributable to any injury to or death of a person or damage to or loss of property arising from the breach by CONTRACTOR of its obligations under this Agreement or from any willful or negligent act, omission or delay on the part of the CONTRACTOR its servants or agents in performing the services or as a result of the services CONTRACTOR shall further indemnify the COMPANY from all costs charges and expenses whatsoever that the COMPANY sustains or incurs in or about all claims actions, suits and proceedings for the use of an invention claimed in a patent or infringement or alleged infringement of any patent or any registered industrial design or any copyright resulting from the performance of the obligations under the Agreement and in respect of the use of or disposal by the COMPANY of anything furnished pursuant to the Agreement CONTRACTOR's liability to indemnify or reimburse the COMPANY under the Agreement shall not affect or prejudice the COMPANY from exercising any other rights under law

3 4 Termination or Suspension

The COMPANY may for its sole convenience and by giving notice to CONTRACTOR terminate or suspend the work with respect to all or any part or parts of the work not completed All work completed by the CONTRACTOR to the satisfaction of the COMPANY before the giving of such notice shall be paid for by the COMPANY in accordance with the provisions of the Agreement and for all work not completed before the giving of such notice the COMPANY shall pay the CONTRACTOR s costs as determined under the provisions of the Agreement and in addition an amount representing a fair and reasonable fee in respect of such work In addition CONTRACTOR shall be reimbursed for its cost of and incidental to the cancellation of obligations incurred by the CONTRACTOR pursuant to such notice and obligations incurred by or to which the CONTRACTOR is subject with respect to the work Payment and reimbursement shall be made only to the extent that it is established to the satisfaction of the COMPANY that the costs and expenses were actually incurred by the CONTRACTOR and that the same are fair and reasonable and are properly attributable to the termination or suspension of the work or the part thereof so terminated or suspended CONTRACTOR shall not be entitled to be reimbursed any amount which taken together with any amounts paid or becoming due to the CONTRACTOR under the Agreement exceeds the price applicable to the work or the particular part thereof This Article 3 4 is without prejudice to the COMPANY s rights pursuant to Article 3 5

3 5 Default

Notwithstanding the provisions of Article 3 4 the COMPANY may by notice to the CONTRACTOR forthwith terminate the whole or any part of the work if

(1) the CONTRACTOR becomes bankrupt or insolvent or a receiving order is made against the CONTRACTOR or an assignment is made for the benefit of creditors or if an order is made or resolution passed for the winding up of the CONTRACTOR or if the CONTRACTOR takes the benefit of any statute for the time being in force relating to bankrupt or insolvent debtors or

(2) the CONTRACTOR fails to perform any of its obligations under the Agreement or in the COMPANY s view so fails to make progress as to endanger performance of the Agreement in accordance with its terms

In the event that the COMPANY terminates the work in whole or in part pursuant to the foregoing, the COMPANY may without prejudice to its other rights under law arrange upon such terms and conditions and in such manner as the COMPANY deems appropriate for the work to be completed that was so terminated and the CONTRACTOR shall be liable to the COMPANY for any excess costs relating to the completion of the work

3 6 Records

The CONTRACTOR shall keep proper accounts and records of the costs of the work and of all expenditures or commitments made by the CONTRACTOR including the invoices receipts and vouchers which shall at reasonable times be open to audit and inspection by the authonzed representatives of the COMPANY who may make copies and take extracts therefrom

3 7 OWNERship of Intellectual Property

CONTRACTOR shall not divulge or use such technical information inventions or confidential business information received from the COMPANY other than in performing the work under the Agreement

3 8 Insurance

The CONTRACTOR agrees at all times during this Agreement to maintain in full-force and effect the following insurance coverages

(1) Comprehensive General Liability Insurance with limits not less than $5,000,000 combined single limit per occurrence for Bodily Injury and Property Damage with a $10,000 000 aggregate
(2) Automobile Liability Insurance with limits not less than $3 000 000 combined single limit per occurrence for Bodily Injury and for Property Damage Coverage should apply to all owned non-owned hired and leased vehicles
(3) Workers' Compensation Insurance as required by law covenng all work performed by it under this Agreement including Employers' Liability Insurance with a limit of liability of $1 000 000

All such insurance policies will be pnmary without the nght of contribution from any other insurance coverage maintained by COMPANY The COMPANY shall be shown as an additional insured under (1) and (2) above The fact that insurance is obtained by CONTRACTOR shall not be deemed to release or diminish the liability of CONTRACTOR including without limitation liability under the indemnity provisions of this Agreement CONTRACTOR hereby agrees to waive any and all nghts of subrogation it may have against COMPANY by virtue of any claims which may anse as a result of services performed in connection with this Agreement, and all policies of insurance herein shall be so endorsed CONTRACTOR also hereby agrees to obtain from its insurance carner(s) a wavier of subrogation in favor of COMPANY

Insurance similar to that required for the CONTRACTOR shall be required by CONTRACTOR of the subcontractors to cover their operations performed under this Agreement The CONTRACTOR shall be held responsible for any modifications in these insurance requirements as they apply to subcontractors unless such modifications have the COMPANY S approval Individual contractors shall not be considered subcontractors for purposes of this paragraph

All policies required herein shall be written by insurance earners with a rating of A M Bests of at least A- and a financial size category of at least VIII Insurance certificates evidencing the above requirements shall be furnished by CONTRACTOR to the COMPANY pnor to commencement of the Scope of Work and provide for not less than 30 days pnor notice to the COMPANY of any cancellation of the policies

3 9 Amendments

No amendment change or modification of the Agreement nor waiver of any of the terms and provisions shall be deemed valid and binding on the parties unless effected by a written amendment signed by the parties

4 MISCELLANEOUS

4 1 Job-Site Safety/Control of Work

CONTRACTOR shall be responsible only for its activities and that of its employees on any site CONTRACTOR will not direct supervise or control the work of other contractors or their subcontractors CONTRACTOR's services do not constitute any form of guarantee or insurance with respect to the performance of other contractors or their subcontractors CONTRACTOR does not assume responsibility for the means and methods employed by others in their work Insofar as job site safety is concerned CONTRACTOR is responsible only for the health and safety of its employees Nothing herein shall be construed to relieve COMPANY or any other consultants or contractors from their responsibilities for maintaining a safe job site CONTRACTOR shall not advise on issue directions regarding, or assume control over safety conditions and programs for others at the job site Neither the activities of CONTRACTOR nor the presence of CONTRACTOR or its employees and subcontractors shall be construed to imply that CONTRACTOR controls the operations of others or has any responsibility for job site safety

4 2 Right of Entry

COMPANY will provide for the right of entry for CONTRACTOR its subcontractors and all necessary equipment in order to complete the work under this Agreement While CONTRACTOR will take all reasonable precautions to minimize any damage to the property it is understood by COMPANY that in the normal course of work some limited incidental damage such as localized disturbance of soil and vegetation may occur, the correction of which is not part of this Agreement

In the prosecution of this work CONTRACTOR will take all reasonable precautions to avoid damage or injury to subterranean structures or utilities The CONTRACTOR is required to perform ample site reconnaissance to identify utilities and environmental conditions COMPANY agrees to only hold CONTRACTOR harmless for damage to subterranean structures or utilities and for any impact this damage may cause where the subterranean structures and utilities are not correctly shown on the plans furnished to the CONTRACTOR

4 3 Disputes

In the event that one party makes a claim against the other at law or otherwise and then fails to prove such claim then the prevailing party shall be entitled to all costs including attorneys fees incurred in defending against the claim

4 4 Disposal of Hazardous Samples/Matenals and Contaminated Equipment

All samples and matenals produced in the course of CONTRACTOR's work pursuant to this agreement containing or potentially containing hazardous constituents are the property and responsibility of COMPANY and shall be returned to COMPANY for proper disposal All laboratory and field equipment that cannot readily and adequately be cleansed of its hazardous contaminants shall become the property and responsibility of COMPANY All such equipment shall be charged and turned over to COMPANY for proper disposal Alternate arrangements to turn such equipment, matenals and/or samples directly over to a licensed hazardous waste disposal facility may be made at COMPANY's direction and expense It is understood and agreed that CONTRACTOR is not and has no responsibility as a handler generator operator treater storer transporter or disposer of hazardous or toxic substances waste or matenals found or identified at the site

4 5 Notification of Hazardous Matenals

COMPANY hereby warrants that if it knows or has any reason to assume or suspect that hazardous matenals may exist at the project site it has so informed CONTRACTOR COMPANY shall furnish to CONTRACTOR all documents and information known to COMPANY that relate to the identity location, quantity nature or charactenstics of any hazardous materials or suspected hazardous matenals, on or under the site In addition COMPANY will furnish such other reports

data studies plans specifications documents and other information on surface and subsurface site conditions required by CONTRACTOR for proper performance of its services

4 6 Severability
The invalidity in whole or in part of any provision of this Agreement will not affect the validity of any other provision of this Agreement

4 7 Entire Agreement
This Agreement including any Schedules and Exhibits and all amendments and supplements thereto contain the complete agreement between the COMPANY and the CONTRACTOR with respect to the matters contained in this Agreement and supersedes all other agreements whether written or oral with respect to the matters contained in this Agreement

4 8 Captions
The captions contained in this Agreement are for convenience and reference only and in no way define describe extend or limit the scope or intent of this Agreement or the intent of any provision contained in this Agreement

4 9 Counterparts
This Agreement may be executed in one or more counterparts each of which shall be deemed an original and all of which shall be deemed one and the same Agreement

4 10 Waiver
The waiver by either party of any failure on the part of the other party to perform in accordance with any of the terms or conditions of this Agreement shall not be construed as a waiver of any future or continuing failure whether similar or dissimilar thereto Except as otherwise expressly provided herein no waiver of any right shall be implied by any delay by a party in enforcing or acting under such right Waivers shall be effective only if specifically set forth in writing signed by the party to be charged with such waiver

4 11 No Partnership
Nothing herein shall be construed as to creating a partnership between the COMPANY and the CONTRACTOR or creating liability on the part of one party for any act or omission of the other

4 12 Independent Contractors
The relationship of the parties shall be that of independent contractors

4 13 Remedies Cumulative
No remedy or election hereunder shall be deemed exclusive but shall wherever possible be cumulative with all other remedies at law or in equity

4 14 Governing Law
This Agreement and any provisions contained herein and any issues related shall be governed by and construed in accordance with the laws of the State of Utah

IN WITNESS WHEREOF the parties hereto have by and through their duly authorized officers in that regard made and executed this Agreement as of the date first written above

SIGNED and DELIVERED

_____ Inc

By _____

Title _____

CONTRACTOR _____

By _____

Title _____

END OF DOCUMENT

Document 00610

PERFORMANCE BOND

KNOWN ALL MEN BY THESE PRESENTS

That _____ (CONTRACTOR) of _____

a corporation of the state of _____ hereinafter called 'Principal" and

_____
(Name of Surety)

_____
Address of Surety)

hereinafter called 'Surety" are held and firmly bound unto Wasatch Regional Landfill Inc hereinafter called 'COMPANY" in the sum of _____ dollars ($_____) in lawful money of the United States for the payment of which sum well and truly to be made we bind ourselves successors and assigns jointly and severally firmly by these presents

THE CONDITION OF THIS OBLIGATION is such that whereas the Principal entered into a certain Agreement with the COMPANY dated _____ 2010, a copy of which is hereto attached and made a part hereof for the LIQUID WASTE POND AT WASATCH REGIONAL LANDFILL TOOELE COUNTY UTAH

NOW THEREFORE if the Principal shall well truly and faithfully perform its duties all the undertakings covenants terms conditions and agreements of said Agreement during the original term thereof and any extensions thereof which may be granted by the COMPANY with or without notice to the Surety and during the one-year guaranty period and if he shall satisfy all claims and demands incurred under such Agreement and shall fully indemnify and save harmless the COMPANY from all costs and damages which it might suffer by reason of failure to do so and shall reimburse and repay the COMPANY all outlay and expense which the COMPANY may incur in making good any default, then this obligation shall be void otherwise to remain in full force and effect

PROVIDED FURTHER that said Surety for value received hereby stipulates and agrees that no change extension of time alteration or addition to the terms of the Agreement or to the WORK to be performed thereunder or the SPECIFICATIONS accompanying the same shall in any wise affect its obligation on this BOND and it does hereby waive notice of any such change or to the WORK or time alteration or addition to the terms of the Agreement or to the WORK or to the SPECIFICATIONS

PROVIDED FURTHER that no final settlement between the COMPANY and the Principal shall abridge the right of any beneficiary hereunder whose Claim may be unsatisfied

IN WITNESS WHEREOF this instrument is executed in _____ counterparts each one of which shall be deemed an original this _____ day of _____ 2010

ATTEST

_____ For _____
(Principal) (Company)

_____ Of _____
(Principal Secretary)

(SEAL) (Address)

(Witness as to Principal)

(Address)

ATTEST

(Surety) For (Company)

(Surety Secretary) Of

(Address)

(SEAL)

(Witness as to Principal) (Attorney in Fact)

(Address) (Address)

END OF DOCUMENT

Document 00615

CERTIFICATES OF INSURANCE

THE STATE OF _____ §

§ KNOW ALL MEN BY THESE PRESENTS

THE COUNTY OF _____ §

THAT WE, _____

_____ as

Principal hereinafter called "Contractor" do hereby hold and will maintain the required coverages as set forth in the Agreement

CONTRACTOR AS PRINCIPAL

_____
Company Name

By _____
Name
Title
Date

THE FOREGOING ARE ACCEPTED ON BEHALF OF WASATCH REGIONAL LANDFILL INC

By _____
Name
Title
Date

END OF DOCUMENT

Document 00650

NOTICE TO PROCEED

Date _____

To _____

Address _____

_____

_____

Project Title _____

Site Name _____

Location _____

You are hereby notified that the Date of Commencement of the Work is _____ 2010 On that date you are to start performing your obligations under the Contract Documents In accordance with Article 2 of the Agreement the Contract Time is _____ days the date on which penalties for delay shall commence is established as _____ 2010

A pre-construction conference will be held at _____ AM/PM on _____ 2010 at the Wasatch Regional Landfill

Additionally before you may start any Work at the site you must

_____

_____

_____

_____

WASATCH REGIONAL LANDFILL INC

BY _____

Project Manager

cc _____

_____

END OF DOCUMENT

Document 00655

APPLICATION AND RECOMMENDATION FOR PAYMENT

	APPLICATION NO _____	**FOR PERIOD BEGINNING** _____ **& ENDING** _____
	CONTRACTOR'S APPLICATION FOR PAYMENT	
A	Total Work Completed to Date 1 For Unit Price Work, attach itemized listing of number of units completed to date for each item of the Work identified in Document 00405 or approved Change Orders 2 For Lump Sum Work attach percentage complete of each portion of the Work listed in the Schedule of Values	$
B	Materials Currently Stored and Not Incorporated Into the Work = _____ X 85 =	$
C	Total Earnings To Date (A + B)	$
D	Retainage as a percentage of Total Work Completed to Date (check one) _____ 10% for Progress Payment _____ 0% for Final Payment _____ Other _____	$
E	Liquidated Damages _____ Days at $_____/Day	$
F	Total Reductions (D + E)	$
G	Total Payments Due To Date (C - F)	$
H	Previous Recommendations for Payment	$
I	TOTAL AMOUNT DUE CONTRACTOR THIS DATE	$

CONTRACT AMOUNT SUMMARY		CONTRACT TIME SUMMARY	
A ORIGINAL CONTRACT PRICE	$	ORIGINAL CONTRACT TIME	
B Approved Change Orders #____ $_____ #____ $_____ #____ $_____ #____ $_____ #____ $_____	$	C Approved Change Order Extensions #____ _____ days #____ _____ days #____ _____ days #____, _____ days #____ _____ days	
C TOTAL CURRENT CONTRACT PRICE	$	C TOTAL CURRENT CONTRACT TIME	
D TOTAL EARNINGS TO DATE	$	D DAYS USED TO DATE	
E PERCENTAGE EARNINGS TO DATE	$	E PERCENTAGE DAYS USED TO DATE	
CURRENT CONTRACT SUBSTANTIAL COMPLETION DATE _____			
Contractor's Estimated Substantial Completion Date ____/____/____ (Attach monthly revised construction schedule in accordance with Paragraph 3 11 3 of General Conditions)			

CONTRACTOR'S CERTIFICATION

Contractor hereby certifies that (1) all previous payments received from Wasatch Regional Landfill, Inc for Work completed under this Contract have been applied by Contractor to discharge in full all obligations of Contractor incurred in connection with the Work covered by all previous Applications For Payment and (2) all materials and equipment incorporated in the completed Work covered by the Application For Payment are free and clear of all liens claims security interests and encumbrances

_____ By _____
(Contractor)

_____ _____
(Name) (Title)

_____
(Date)

RECOMMENDATION FOR PAYMENT

Having reviewed the Contractor's Application for Payment and supporting information (initial appropriate action)

_____ I recommend payment for the full amount of the application that is, $_____

_____ I recommend payment for a portion of the amount of the application in the amount of $_____ Payment for the remaining $_____ of the application is contingent on receipt of the corrections or additional information marked on the application

_____ I am returning the Application for Payment to the Contractor for the corrections or additional information marked on the application

_____ I decline to recommend payment on the basis of the provisions in Paragraph 9 6 of the General Conditions and described more specifically in Attachment A

By _____ Date _____
Wasatch Regional Landfill, Inc Project Manager

END OF DOCUMENT

Document 00675

CHANGE ORDER

To _____

From _____

Re _____

PART 1 NATURE OF CHANGES

1 1 Brief description of changes in the Work

_____

_____

_____

_____

1 2 Reason for changes

_____

_____

_____

_____

1 3 Changes are described in detail in the following attachments which are hereby made a part of this Change Order

_____

_____

_____

PART 2 ADJUSTMENTS TO CONTRACT

2 1 Change to Contract Price

	Percentage of Original Contract Price	Dollar Amounts Contract Price
A Original Contract Price	100%	
B Previous Change Orders		

C This Change Order _____ _____

D New Total Contract Price _____ _____

2 1 Change to Contract Time

	Percentage of Original Contract Time	Date or Days
A Contract Commencement Date		_____
B Original Contract Time	100%	_____ days
C Previous Change Order Extensions	_____	_____ days
D This Change Order Extension	_____	_____ days
E New Total Contract Time	_____	_____ days
F New Substantial Completion Date		_____

PART 3 CONTRACTOR'S ACCEPTANCE

The undersigned Contractor agrees to perform the changes stipulated in this Change Order and any attachments for the dollar amount indicated and within the contract time indicated

_____ By _____

(Contractor) (Signature)

_____

(Printed or Typed Name)

_____

(Title)

_____

(Date)

PART 4 WASATCH REGIONAL LANDFILL, INC APPROVAL

By _____

(Signature)

_____

(Printed or Typed Name)

_____

(Title)

_____

(Date)

END OF DOCUMENT

CONDITIONS OF CONTRACT

Document 00700

GENERAL CONDITIONS

ARTICLE 1 GENERAL PROVISIONS

1 1 *BASIC DEFINITIONS*

1 1 1 *Agreement* The written and signed Contract Document, Document 00500 between Wasatch Regional Landfill Inc and the Contractor covering the Work to be performed other Contract Documents are attachments to the Agreement and are made a part thereof as identified in the Agreement

1 1 2 *Approve approved* The acceptance or ratification by the Project Manager of an action by the Contractor or condition of the Work, provided in writing if required

1 1 3 *Bonds* Performance Bond, Payment Bond and other instruments of surety

1 1 4 *Conditions of the Contract* The General Conditions and Supplementary Conditions constitute the part of Contract Documents which define the rights responsibilities and relationships of the entities involved in performance of the Contract Participants in the contract, whose roles are identified in the Conditions of the Contract, include

1 *Owner* As defined in Article 2
2 *Contractor and Superintendent* As defined in Article 3
3 *Wasatch Regional Landfill Inc Project Manager Wasatch Regional Landfill Inc Project Engineer and Site Manager* As defined in Article 4
4 *Architect/Engineer* As defined in Article 4
5 *Subcontractor and Supplier* As defined in Article 5 and
6 *Subconsultant* As defined m Article 4

1 1 5 *Contract* The Contract Documents form the Contract for Work The Contract represents the entire and integrated agreement between *Wasatch Regional Landfill Inc* and Contractor and supersedes prior negotiations representations or agreements, either written or oral The Contract may be amended or modified only by a Modification The Contract Documents shall not be construed to create a contractual relationship of any kind between any persons or entities other than *Wasatch Regional Landfill Inc* and Contractor

1 1 6 *Contract Documents* The Agreement between *Wasatch Regional Landfill Inc* and Contractor the portions of the Contractor's Bid attached to the Agreement, and any post Bid documentation submitted prior to execution when attached to the Agreement the Bonds the Conditions of the Contract, the Drawings and Specifications prepared by or approved by *Wasatch Regional Landfill Inc* appropriate Addenda, the Notice to Proceed, and other documents as they are specifically enumerated in the Agreement, plus Modifications issued after execution of the Agreement

1 1 7 *Drawings* The graphic and pictorial portions of the Contract Documents which define the character and scope of the Work

1 1 8 *Furnish* Supply pay for and deliver to the Project Site ready for unloading unpacking, assembly and installation

1 1 9 *General Conditions* The standard document published by Wasatch Regional Landfill Inc a part of the Conditions of the Contract

1 1 10 *General Requirements* The sections of Division 1 of the Specifications which specify administrative and procedural requirements and temporary facilities required for the Project

1 1 11 *Install* Unload unpack, assemble erect place anchor apply work to dimension finish, cure clean protect, and similar operations

1 1 12 *Modification* A modification to the Contract Documents issued by the Wasatch Regional Landfill Inc Project Manager on or alter the Effective Date of the Agreement, is a Change Order a Work Change Directive or a written order for a minor change m the Work

1 1 13 *Notice of Intent to Award* The written notice by Wasatch Regional Landfill Inc to the apparent successful Bidder stating that upon compliance by the Bidder with the conditions enumerated in the notice Wasatch Regional Landfill Inc will sign and award the Contract

1 1 14 *Notice to Proceed* The written notice by Wasatch Regional Landfill Inc to Contractor fixing the date on which the Contract Time will commence and on which Contractor shall start to perform Contractor's on site obligations under the Contract Documents

1 1 15 *Product* Materials equipment, or systems incorporated into the Project

1 1 16 *Project* The total construction of which the Work performed under the Contract Documents may be the whole or part and which may include construction by Wasatch Regional Landfill Inc or by separate contractors

1 1 17 *Project Manual* The volume assembled for the Work which includes the Bidding Requirements sample forms Conditions of the Contract, and Specifications

1 1 18 *Property* Lands on which the Work is to be performed and easements for access thereto and other lands which are designated for use by the Contractor

1 1 19 *Provide* Furnish and install complete and ready for the intended use

1 1 20 *Site* The Property

1 1 21 *Separate Contractor* A person firm, or corporation retained by Wasatch Regional Landfill Inc to perform work on the Property under a separate agreement

1 1 22 *Specifications* The portion of the Contract Documents Divisions 1 through 16 consisting of the written requirements for materials, equipment, systems standards and workmanship for the Work, and performance of related services

1 1 23 *Supplementary Conditions* The part of the Conditions of the Contract which amends or supplements the General Conditions

1 1 24 *Surety* The entity that is bound by the Performance Bond Statutory Payment Bond One Year Maintenance Bond and One Year Surface Correction Bond and that is responsible for completion of the Contract, including the correction period, and for payment of debts incurred in fulfilling the Contract Surety shall include any co-surety or reinsurer as applicable

1 1 25 *Work* The entire completed construction required by the Contract Documents including all labor materials equipment, and services provided by Contractor to fulfill Contractor's obligations The Work may constitute the whole or a part of the Project

1 2 *EXECUTION CORRELATION AND INTENT*

1 2 1 The Agreement shall be signed by Wasatch Regional Landfill Inc and Contractor as provided in the Contract Documents

1 2 2 Execution of the Contract by Contractor is conclusive that Contractor has carefully examined the Contract Documents visited the site of the Work, become familiar with local conditions under which the Work is to be performed and fully informed itselves as to conditions and matters which can affect the Work or costs thereof Contractor further affirms that it has correlated personal observations with requirements of the Contract Documents

1 2 3 The intent of the Contract Documents is for Contractor to include all items necessary for the proper execution and completion of the Work What is required by one of the Contract Documents shall be as binding as if required by all Performance by Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the desired results

1 2 4 Reference to standard specifications manuals or codes of a technical society organization or association, or to laws or regulations of a governmental authority whether specific or implied shall mean the latest edition in effect as of the date of receipt of bids except as may be otherwise specifically stated

1 2 5 No provision of any referenced standard specification or manual shall be effective to change the duties and responsibilities of Wasatch Regional Landfill Inc Contractor or Architect/Engineer or their consultants employees, or representatives from those set forth in the Contract Documents nor shall it be effective to assign to Architect/Engineer or its consultants employees or representatives any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibilities contrary to provisions of the Contract Documents

1 2 6 The organization of Specifications into divisions sections, and articles and arrangement of Drawings shall not control Contractor in dividing the Work among Subcontractors or in establishing the extent of work to be performed by any trade

1 2 7 Specifications are written in imperative and streamlined form This imperative language is directed to the Contractor unless specifically noted otherwise When written in the streamlined form, the words 'shall be' are included by inference where a colon( ) is used within sentences or phrases

1 2 8 Unless otherwise stated in Contract Documents, words which have well known construction industry technical meanings are used in Contract Documents in accordance with such recognized meanings

1 3 *CONFLICTS ERRORS OR DISCREPANCIES*

1 3 1 If Contractor finds conflict, error or discrepancy in the Contract Documents Contractor shall report to Wasatch Regional Landfill Inc Project Manager in writing at once and shall obtain a written interpretation or clarification from Project Manager before proceeding with the Work affected thereby however Contractor shall not be liable to Wasatch Regional Landfill Inc or to Architect/Engineer for failure to report any conflict, error or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof or should reasonably have known thereof

1 4 *OWNERSHIP AND USE OF CONTRACT DOCUMENTS*

1 4 1 Drawings Specifications and other documents prepared by Wasatch Regional Landfill Inc or by Architect/Engineer are instruments of service through which the Work to be executed by Contractor is described

1 4 2 Neither Contractor nor Subcontractor nor material or equipment supplier shall own or claim a copyright to the Contract Documents or any part of them

1 4 3 Contract Documents prepared by Wasatch Regional Landfill Inc or by Architect/Engineer and copies furnished to Contractor are for use solely with respect to this Project They shall not be used by Contractor Subcontractor or material or equipment supplier on other projects or for additions to this Project outside the scope of the Work without the specific written consent of Wasatch Regional Landfill Inc and Architect /Engineer when applicable

1 4 4 Contractor Subcontractors and material and equipment suppliers are granted a limited license to use and reproduce applicable portions of Contract Documents appropriate to and for use in execution of their work under the Contract

1 5 *INTERPRETATION*

1 5 1 In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and any" and articles such as 'the' and "an" but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement

ARTICLE 2 THE OWNER

2 1 *DEFINITION*

2 1 1 *Wasatch Regional Landfill Inc* The Owner is Wasatch Regional Landfill Inc or its subsidiary The term 'Wasatch Regional Landfill Inc " means Wasatch Regional Landfill Inc its subsidiary or the authorized representative or Wasatch Regional Landfill Inc or its subsidiary

2 2 *LIMITATIONS ON WASATCH REGIONAL LANDFILL INC EMPLOYEES*

2 2 1 No officer or employee of Wasatch Regional Landfill Inc is empowered to authorize the Contractor to perform any act contrary to the terms of this Contract or the laws and ordinances of the place of the Project

2 3 *INFORMATION AND SERVICES REQUIRED OF WASATCH REGIONAL LANDFILL INC*

2 3 1 Wasatch Regional Landfill Inc assisted by the Architect/Engineer when employed will complete an application for building permit, as applicable for the place of the project

2 3 2 Unless otherwise provided in Contract Documents Wasatch Regional Landfill Inc will furnish to Contractor one set of Contract Documents Additional copies will be furnished on Contractor's request at the discretion of the Wasatch Regional Landfill Inc Project Manager

2 3 3 When necessary for performance of the Work, Wasatch Regional Landfill Inc will provide surveys describing physical characteristics legal limitations legal description of the Project site and horizontal and vertical control adequate to locate the Project

2 3 4 If Wasatch Regional Landfill Inc is required under the Contract Documents to provide information or services such will be provided by Wasatch Regional Landfill Inc with reasonable promptness to avoid delay in orderly progress of the Work

2 3 5 The foregoing are in addition to other duties and responsibilities of Wasatch Regional Landfill Inc enumerated herein and especially those in respect to Article 6 and Article 9

2 4 *AVAILABILITY OF LANDS*

2 4 1 Wasatch Regional Landfill Inc shall furnish the lands on which the Work is to be performed easements for access thereto and such other lands which are designated in the Contract Documents for use by the Contractor Wasatch Regional Landfill Inc will obtain and pay for easements for permanent structures and for permanent changes in existing facilities unless otherwise provided in the Contract Documents

2 5 *WASATCH REGIONAL LANDFILL INC RIGHT TO STOP* WORK

2 5 1 If Contractor fails to correct Work which is not in accordance with requirements of the Contract Documents as required in Paragraphs 12 1 2 and 12 2 or persistently fails to carry out Work in accordance with Contract Documents Wasatch Regional Landfill Inc by written order may order Contractor to stop the Work or any portion thereof until the cause for such order has been eliminated However the right of Wasatch Regional Landfill Inc to stop the Work shall not give rise to a duty on the part of Wasatch Regional Landfill Inc to exercise this right for the benefit of Contractor or any other person or entity except to the extent required by Paragraph

2 6 *WASATCH REGIONAL LANDFILL INC RIGHT TO CARRY OUT WORK*

2 6 1 If Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails, within a seven day period after receipt of written notice from Wasatch Regional Landfill Inc to commence and continue correction of such default or neglect with diligence and promptness Wasatch Regional Landfill Inc may after that seven day period, give Contractor a second written notice to correct such deficiencies within a second seven day period If Contractor within the second seven day period after receipt of the second notice fails to commence and continue to correct any deficiencies Wasatch Regional Landfill Inc may correct such deficiencies without prejudice to other remedies Wasatch Regional Landfill Inc may have including right of termination under Paragraph 14 1

2 6 2 In such case an appropriate Change Order shall be issued deducting from payments then or thereafter due to Contractor the cost of correcting such deficiencies including compensation for Architect/Engineer's additional services and expenses made necessary by such default, neglect, or failure If payments then or thereafter due to Contractor are not sufficient to

cover such amounts Contractor shall pay the difference to Wasatch Regional Landfill Inc

2 6 3 Notwithstanding Wasatch Regional Landfill Inc right to carry out the Work, maintenance and protection of the Work remain Contractor's responsibility as provided for in the Performance Bond and as provided in Paragraph

ARTICLE 3 THE CONTRACTOR

3 1 *DEFINITION*

3 1 1 The Contractor is the person firm, or corporation identified as such in the Agreement, and is referred to throughout the Contract Documents as if singular in number The term Contractor means the Contractor or its authorized representative

3 1 2 Contractor shall maintain an office or agent located near the place of the Project during the period of construction which location's street address or post office address shall be filed with the Wasatch Regional Landfill Inc Project Manager

3 1 3 Contractor shall not let or transfer this Contract without the consent of Wasatch Regional Landfill Inc

3 2 *REVIEW OF CONTRACT DOCUMENTS AND FIELD CONDITIONS BY CONTRACTOR*

3 2 1 Contractor shall carefully study and compare the Contract Documents with each other and with information furnished by Wasatch Regional Landfill Inc pursuant to Paragraph 2 3 and shall report at once to the Wasatch Regional Landfill Inc Project Manager any discovered errors inconsistencies or omissions

3 2 2 Contractor shall take field measurements and verify field conditions and shall carefully compare such conditions and other information known to Contractor with the Contract Documents before commencing activities Discrepancies inconsistencies or omissions discovered during this process shall be immediately report to the Wasatch Regional Landfill Inc Project Manager for resolution

3 2 3 Contractor shall make a reasonable attempt to understand the Contract Documents before requesting interpretation from Wasatch Regional Landfill Inc

3 2 4 Contractor shall perform the Work in accordance with the Contract Documents and submittals approved pursuant to Paragraph 3 14

3 2 5 Contractor shall verify compliance of the Work with Contract Documents before requesting observation by Wasatch Regional Landfill Inc

3 2 6 Contractor shall give the Wasatch Regional Landfill Inc Project Manager 48 hour written notice before commencing work or renewing work where work has been stopped Contractor shall also give the same notice to Wasatch Regional Landfill Inc s authorized inspectors

3 3 *SUPERVISION AND CONSTRUCTION PROCEDURES*

3 3 1 Contractor shall supervise direct, and inspect the Work competently and efficiently devoting such attention and applying such skills and expertise as necessary to perform the Work in accordance with the Contract Documents Contractor shall be solely responsible and have sole control over the means methods techniques sequences, and procedures of construction, and for coordinating all work under the Contract

3 3 2 Regardless of inspections by Wasatch Regional Landfill Inc Contractor is responsible to perform and complete the Work in accordance with the Contract Documents Wasatch Regional Landfill Inc has no liability or responsibility to Contractor or Surety for work performed by Contractor which is not in accordance with Contract Documents regardless of whether discovered during construction or after acceptance of the Work

3 4 *SUPERINTENDENT*

3 4 1 Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall have the authority and responsibility to act for Contractor and to represent Contractor Communications given to the superintendent shall be as binding as if given to Contractor

3 4 2 Contractor after Notice of Intent to Award and prior to beginning field operations shall furnish to the Wasatch Regional Landfill Inc Project Manager in writing, the name and qualifications of the person proposed by Contractor to be the superintendent Contractor shall not assign or substitute any person as superintendent to whom the Wasatch Regional Landfill Inc Project Manager makes reasonable objection in writing

3 5 *LABOR, MATERIALS AND EQUIPMENT*

3 5 1 Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents Contractor shall at all times maintain strict discipline and good order at the site

3 5 2 It is the policy of Wasatch Regional Landfill Inc to achieve a drug free workforce and to provide a workplace that is free from the use of illegal drugs substance abuse and alcohol abuse The manufacture distribution dispensation possession (either externally or internally), sale or use of illegal drugs by Contractor's employees while on duty at Wasatch Regional Landfill Inc worksites or on Wasatch Regional Landfill Inc projects is prohibited Contractor's employees are prohibited from working at Wasatch Regional Landfill Inc worksites or Wasatch Regional Landfill Inc projects while impaired by alcohol or under the influence of illegal or illicit substances

3 5 3 Unless otherwise provided in the Contract Documents Contractor shall furnish and assume full responsibility for materials equipment, labor transportation, construction equipment and machinery tools appliances fuel power light,

heat, telephone water sanitary facilities transportation temporary facilities supplies and other facilities and incidentals necessary for the furnishing, performance testing, start-up and completion of the Work

3 5 4 Materials and equipment shall be of specified quality and new except as otherwise provided in the Contract Documents If required by Wasatch Regional Landfill Inc Contractor shall furnish satisfactory evidence including reports of required tests, as to the kind and quality of materials and equipment

3 5 5 Materials and equipment shall be suitably stored in a safe neat, compact, and protected manner Materials shall be stored in such a manner to cause the least inconvenience to adjacent property owners tenants and the general public and shall not block access to or be closer than three feet to any fire hydrant Trees lawns walks drives streets and other improvements shall be protected from damage by the Work, by materials, earth debris water or otherwise If private or public property is damaged by Contractor it shall be restored to original condition or better by Contractor

3 5 6 Contractor shall obtain Wasatch Regional Landfill Inc approval for storage areas to be used for materials or equipment, for which payment has been requested under the provisions of Paragraph 9 4 3 2 Access to such storage areas for inspection purposes shall be provided to designated Wasatch Regional Landfill Inc representatives Materials once paid for by Wasatch Regional Landfill Inc become the property of Wasatch Regional Landfill Inc and may not be removed from the place of storage except to the worksite without Wasatch Regional Landfill Inc written permission Contractor's all risk insurance shall cover all perils including loss or damage to materials during storage loading unloading, and transit to the site

3 5 7 Work shall be performed in a thorough workmanlike manner notwithstanding any omission from the Specifications or the Drawings Work not in accordance with the Contract Documents shall be made to conform thereto Material not in conformance with Contract Documents will be rejected and shall be promptly removed from the site at Contractor's expense

3 6 *PRODUCT, CONSTRUCTION METHODS AND CONSTRUCTION EQUIPMENT SUBSTITUTIONS*

3 6 1 For products specified by reference standards or by description only Contractor may provide any product meeting those standards or description

3 6 2 For products specified by naming one or more manufacturers with provision for substitutions (or equal) Contractor may submit a request for substitution for any manufacturer not named

3 6 3 When individual specification sections require a specific construction method or the use of specific construction equipment, with provision for substitutions (or equal) Contractor may submit a request for any method or equipment not named

3 6 4 Contractor shall document each request for substitution with complete data substantiating compliance of proposed substitution with Contract Documents

3 6 5 A request for substitution constitutes a representation that Contractor

1 has investigated the proposed product, method, or equipment and determined that it meets or exceeds the quality level of the specified product, method or equipment
2 shall provide the same warranty for the substitution as for the specified product
3 shall coordinate installation or implementation of the proposed substitution and will make changes to other Work which may be required for the Work to be complete with no additional cost to Wasatch Regional Landfill Inc
4 confirms that cost data is complete and includes all related costs under the Contract Documents
5 waives Claim for additional cost or time extension which may subsequently become apparent and
6 shall provide review or redesign services by a licensed Architect/Engineer and shall obtain reapproval and permits from authorities

3 6 6 Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals without separate written request, nor will they be considered when acceptance will require revision to the Contract Documents

3 6 7 Wasatch Regional Landfill Inc has authority to reject any request for substitution

3 7 *CASH ALLOWANCES*

3 7 1 Contractor shall include in the Contract Price all allowances stated in the Contract Documents for

1 services utility relocations permits or other such capital costs
2 materials and equipment

Items covered by an allowance shall be supplied for such amounts and by such persons or entities as Wasatch Regional Landfill Inc may direct, but Contractor shall not be required to employ persons or entities against which Contractor makes reasonable objection

3 7 2 Unless otherwise stated in the Contract Documents

1 materials and equipment under an allowance shall be selected promptly by Wasatch Regional Landfill Inc within the time limits for processing submittals
2 allowances shall cover the cost to Contractor of services completed or materials and equipment delivered at the site and all required non exempt taxes less applicable trade discounts

3 Contractor's costs for administering services unloadmg and handling products at the site labor mstallation costs, overhead profit, and other expenses contemplated for the allowance shall be included in the Contract Pnce and not in the allowance

4 whenever costs are more than or less than the allowance the Contract Pnce shall be adjusted accordingly by Change Order The amount of the Change Order shall be the difference between actual costs and the amount of the allowance stated in the Contract Documents and shall balance out all credits due to Wasatch Regional Landfill Inc

3 8 *WARRANTY*

3 8 1 Contractor warrants to Wasatch Regional Landfill Inc that matenals and equipment furnished under the Contract will be free of defects m title of good quality and new unless otherwise required or permitted by the Contract Documents Contractor further warrants that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform with requirements of the Contract Documents

3 8 2 Contractor fiirther warrants that the Work will be free of concentrations of polychlonnated biphenyl (PCB) and other substances defined as hazardous by the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) or any other applicable law or regulation Excepted from this warranty are those hazardous substances specified for use under this Contract

3 8 3 Work not conforming to these requirements includmg substitutions not properly approved and authonzed may be considered non conforming Work Contractor's warranty excludes remedy for damage or defect caused by abuse by person or persons other than those for whom Contractor is responsible modifications performed by someone other than Contractor improper or insufficient mamtenance by Wasatch Regional Landfill Inc improper operation or normal wear and tear under normal usage and excludes a claim that hazardous matenal was incorporated into the Work if that matenal was specified m the Contract Documents If required by Wasatch Regional Landfill Inc Contractor shall fiimish satisfactory evidence as to the kind and quality of matenals and equipment

3 8 4 In the event of a defect in a specified product either dunng constmction or the warranty period Contractor shall take appropnate measures with the manufacturer of the product to assure correction or replacement of the defective product with minimum delay

3 8 5 Contractor warrants that title to all Work, matenals and equipment covered by an Application for Payment will pass to Wasatch Regional Landfill Inc either by incorporation m the constmction or upon the receipt of payment by the Contractor whichever occurs first Such title shall be free and clear of all hens claims security interests or encumbrances No Work, matenals or equipment covered by an Application for Payment shall be subject to an agreement under which an interest is retained or an encumbrance is attached by the seller the Contractor or other party

3 9 *TAXES*

3 9 1 Contractor shall pay all sales consumer use and similar taxes for the Work or portions thereof provided by Contractor which are legally enacted when bids are received, whether or not yet effective or merely scheduled to go into effect

3 9 2 Contractor shall obtain and require Subcontractors to obtain all necessary permits from the State and from local taxing authorities to perform contractual obligations under the Agreement, includmg sales tax permits

3 10 *PERMITS FEES AND NOTICES*

3 10 1 Unless otherwise provided in the Contract Documents Contractor shall secure and pay for all constmction permits licenses and inspections necessary for proper execution and completion of the Work and which are legally required at the time bids are received

3 10 2 Contractor shall comply with and give notices required by laws ordinances mles regulations and lawful orders of public authorities beanng on performance of the Work, includmg Contractor's or Subcontractors' licenses neither Wasatch Regional Landfill Inc nor its agents shall be responsible for monitonng Contractor's compliance with this requirement

3 10 3 It is not Contractor's responsibility to ascertain that the Contract Documents are in accordance with applicable laws statutes, ordinances building codes and mles and regulations However if Contractor observes that portions of the Contract Documents are at vanance therewith, Contractor shall promptly notify the Wasatch Regional Landfill Inc Project Manager in wnting and necessary changes shall be accomplished by appropnate modification

3 10 4 If Contractor performs Work knowing it to be contrary to laws statutes ordinances building codes mles and regulations without such notice Contractor shall assume fiill responsibility for such Work and shall bear the attributable costs

3 11 *CONSTRUCTION SCHEDULES*

3 11 1 Promptly after award of the Contract, Contractor shall prepare and submit a constmction schedule for the Work for the Wasatch Regional Landfill Inc Project Manager's review The schedule shall reflect the minimum time required to complete the Project, not to exceed time limits current under the Contract Documents Contractor shall revise die schedule at appropnate intervals as required by conditions of the Work and the Project The schedule shall be related to the entire Project to the extent required by Contract Documents Contractor shall provide for expeditious and practicable execution of the Work

3 11 2 Contractor shall prepare and keep current, and submit for Wasatch Regional Landfill Inc Project Manager's approval a

schedule of submittals which is coordinated with the construction schedule

3 11 3 Each month Contractor shall submit to the Wasatch Regional Landfill Inc Project Manager a copy of the revised construction schedule indicating actual progress incorporating all applicable changes and indicating courses of action required to assure Project completion within the Contract Time

3 12 *DOCUMENTS AND SAMPLES AT THE SITE*

3 12 1 Contractor shall maintain at the site and make available to the Wasatch Regional Landfill Inc Project Manager one record copy of Drawings Specifications Addenda, Change Orders and other Modifications Such documents shall be maintained in good order and marked currently to record changes and selections made during construction In addition Contractor shall maintain at the site approved Shop Drawings Product Data, Samples and similar submittals These shall be delivered to the Wasatch Regional Landfill Inc Project Manager prior to final inspection as required in Subparagraph 9 10 3

3 13 *MANUFACTURER'S SPECIFICATIONS*

3 13 1 Contractor shall handle and install all materials and perform all work in the manner required by the materials manufacturer Should the Contract Documents and manufacturer's instructions conflict, Contractor shall report the conflict to the Wasatch Regional Landfill Inc Project Manager for resolution prior to proceeding with the Work

3 13 2 References to the manufacturer's specifications manufacturer's directions or manufacturer's recommendations shall refer to the referenced manufacturer's current published documents in effect as of the date of receipt of bids or for Change Orders as of the date of the Change Order

3 14 *SHOP DRAWINGS PRODUCT DATA AND SAMPLES*

3 14 1 *Shop Drawings* The drawings diagrams schedules and other data specially prepared for the Work by the Contractor Subcontractor manufacturer supplier or distributor to illustrate some portion of the Work

3 14 2 *Product Data* The illustrations standard schedules performance charts instructions brochures diagrams and other information furnished by Contractor to illustrate materials or equipment for some portion of the Work.

3 14 3 *Samples* The physical examples which illustrate materials equipment, or workmanship and establish standards by which the work will be judged

3 14 4 Shop Drawings Product Data, and Samples are not Contract Documents The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required, the way Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents Review by the Wasatch Regional Landfill Inc Project Manager is subject to the limitations of Subparagraph 4 2 4

3 14 5 Contractor shall review approve and certify that the content of the submittals conforms to Contract Documents without exception by affixing Contractor's approval stamp and signature and submit to the Wasatch Regional Landfill Inc Project Manager the Shop Drawings Product Data, and Samples required by the Contract Documents Submittals shall be transmitted with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of Wasatch Regional Landfill Inc or of a separate contractor Submittals made by Contractor which are not required by the Contract Documents may be returned without action If in the opinion of the Wasatch Regional Landfill Inc Project Manager the submittals are incomplete indicate an inadequate understanding of the Work covered by the submittal or indicate a lack of review by Contractor prior to submittal the submittal may be returned unchecked to Contractor for correction of deficiencies and subsequent resubmittal

3 14 6 Contractor shall perform no portion of the Work requiring submittal and review of Shop Drawings Product Data, and Samples until the respective submittal has been returned with appropriate action Such work shall be in accordance with reviewed submittals unless the submittals are subsequently found to be defective

3 14 7 By approving certifying and submitting Shop Drawings Product Data, and Samples Contractor represents and Contractor's stamp of approval shall state that Contractor has determined and verified materials quantities field measurements and field construction criteria related thereto or will do so and has checked and coordinated the information contained within such submittals with the requirements of the Work and the Contract Documents

3 14 8 Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by Wasatch Regional Landfill Inc or Architect/Engineer's or Subconsultant's review of Shop Drawings Product Data, or Samples unless Contractor has specifically informed the Wasatch Regional Landfill Inc Project Manager in writing of such deviation at the time of submittal and the Wasatch Regional Landfill Inc Project Manager has given written approval of such deviation Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings Product Data, or Samples by Wasatch Regional Landfill Inc or Architect/Engineer's or Subconsultant's approval thereof

3 14 9 Contractor shall direct specific attention in writing and on resubmitted Shop Drawings Product Data, or Samples to revisions other than those requested by Wasatch Regional Landfill Inc on previous submittals

3 14 10 Informational submittals upon which Wasatch Regional Landfill Inc is not expected to take responsive action may be identified in the Contract Documents

3 14 11 When professional certification of performance criteria or materials systems or equipment is required by the Contract Documents Wasatch Regional Landfill Inc shall be entitled to rely upon the accuracy and completeness of such calculations and certifications

3 14 12 Contractor shall submit Shop Drawings Product Data, and Samples to the Wasatch Regional Landfill Inc Project Manager in time to allow a minimum of 30 days for the Project Manager's review prior to the date Contractor needs the reviewed submittals returned On instructions of Wasatch Regional Landfill Inc Project Manager this time may be shortened for a particular job requirement For product colors or textures to be selected by Wasatch Regional Landfill Inc submit all samples together to allow the Wasatch Regional Landfill Inc Project Manager to prepare a complete selection schedule

3 14 13 Submit Shop Drawings Product Data, and Samples in the forms quantities and procedures specified in the Specifications

3 14 14 When Shop Drawings Product Data, and Samples are required, related work performed prior to review and acceptance of such submittals shall be at Contractor's risk and Wasatch Regional Landfill Inc shall not be obligated to accept such work if such submittals are later found to be not acceptable

3 15 *USE OF SITE*

3 15 1 Contractor shall perform and confine operations at the site to those areas permitted by law ordinances permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment

3 15 2 In addition to lands provided by Wasatch Regional Landfill Inc under Paragraph 2 4 Contractor shall provide for all lands and access thereto that may be required for use by Contractor for temporary construction facilities or for storage of materials and equipment, and shall indemnify Wasatch Regional Landfill Inc during such use as stated in Paragraph 3 21

3 16 *CUTTING AND PATCHING*

3 16 1 Contractor shall be responsible for cutting, fitting, and patching necessary to accomplish the Work and shall suitably support, anchor attach match and trim or seal materials to the work of others Contractor shall coordinate the Work with the work of other contractors to minimize conflicts as provided in Article 6 Construction by Wasatch Regional Landfill Inc or by Separate Contractors

3 16 2 Contractor shall not endanger any work by cutting digging or other action and shall not cut or alter the work of other contractors except with the written consent of Wasatch Regional Landfill Inc and the affected contractor

3 17 *CLEANING*

3 17 1 Contractor shall perform a daily clean up of all dirt, debris scrap materials and other disposable items resulting from Contractor's operations whether on site or off site Unless otherwise authorized all streets access streets driveways and walkways shall be kept clean and open at all times

3 17 2 Failure of Contractor to maintain a clean site including access streets will be the basis for Wasatch Regional Landfill Inc to issue a written notice of non compliance with the Contract. Should that notice to correct not be complied with within 24 hours Wasatch Regional Landfill Inc may authorize the necessary clean up to be performed by others and the cost of such clean up may be deducted from monies due Contractor

3 17 3 Contractor is responsible for disposal of all waste materials and other excess materials resulting from Contractor s operations

3 18 *SANITATION*

3 18 1 Contractor shall provide and maintain sanitary facilities at the jobsite for the use of all construction forces under the Contract

3 19 *ACCESS TO WORK AND INFORMATION*

3 19 1 Contractor shall provide Wasatch Regional Landfill Inc Architect/Engineer Subconsultants and governmental agencies with jurisdictional interests access to the Work in preparation and in progress wherever located Contractor shall provide proper and safe conditions for such access

3 19 2 Contractor shall furnish to the Wasatch Regional Landfill Inc Project Manager such information as required respecting the character of the products and the progress and manner of the Work, including information necessary to determine the cost of the Work

3 20 *ROYALTIES PATENTS AND TRADE SECRETS*

3 20 1 Unless otherwise provided in the Contract Documents Contractor shall at its cost procure any license or permit which is required for the use of any patented invention article process or means method or instrumentality wrought into used in upon or in any way or manner connected with the construction erection or maintenance of the Work or any part thereof as embraced in the Contract Contractor shall pay all fees or royalties required for any such use or license Such fees shall unless otherwise provided in these Contract Documents be included in the Contract Price Contractor and Surety shall protect and hold harmless Wasatch Regional Landfill Inc against any and all demands arising from Contractor s failure to comply with this requirement

3 20 2 Alleged ownership by Contractor of trade secrets as to products used in the Work, or the preparation of any mixture for the Work, shall not be recognized by Wasatch Regional Landfill Inc in the performance of the Contract Wasatch Regional

Landfill Inc shall at all times have the Right to demand and shall be furnished information concerning materials or samples of ingredients of any materials used or proposed to be used in preparation of the concrete placed or other work to be done Mixtures once agreed on shall not be changed in any manner without the knowledge and consent of Wasatch Regional Landfill Inc Wasatch Regional Landfill Inc will make its best efforts to protect the confidentiality of such proprietary information

3 21 *INDEMNIFICATION*

3 21 1 CONTRACTOR COVENANTS AND WARRANTS THAT IT WILL PROTECT DEFEND AND HOLD HARMLESS WASATCH REGIONAL LANDFILL INC ITS EMPLOYEES OFFICERS AND LEGAL REPRESENTATIVE (COLLECTIVELY WASATCH REGIONAL LANDFILL INC ') FROM ANY AND ALL THIRD PARTY CLAIMS DEMANDS AND LIABILITY INCLUDING DEFENSE COSTS RELATING IN ANY WAY TO DAMAGES CLAIMS OR FINES ARISING BY REASON OF OR IN CONNECTION WITH CONTRACTOR S ACTUAL OR ALLEGED NEGLIGENCE OR OTHER ACTIONABLE PERFORMANCE OR OMISSION OF CONTRACTOR IN CONNECTION WITH OR DURING THE PERFORMANCE OF THE DUTIES UNDER THIS AGREEMENT DURING THE PERFORMANCE OF THE WORK AND ~~UP TO A PERIOD OF FIVE YEARS AFTER THE DATE OF FINAL ACCEPTANCE OF THE WORK,~~ *(DURING THE WARRANTY PERIOD AS DEFINED IN THE CONTRACT.)* CONTRACTOR FURTHER COVENANTS AND AGREES TO PROTECT DEFEND INDEMNIFY AND HOLD HARMLESS WASATCH REGIONAL LANDFILL INC FROM ALL CLAIMS ALLEGATIONS FINES DEMANDS AND DAMAGES RELATING IN ANY WAY TO THE ACTUAL OR ALLEGED JOINT AND/OR CONCURRENT NEGLIGENCE OF WASATCH REGIONAL LANDFILL INC AND CONTRACTOR~~, WHETHER CONTRACTOR IS IMMUNE FROM LIABILITY OR NOT~~

3 21 2 IT IS THE EXPRESSED INTENTION OF THE PARTIES HERETO THAT THE INDEMNITY PROVIDED HEREIN IS AN AGREEMENT BY CONTRACTOR TO INDEMNIFY AND PROTECT WASATCH REGIONAL LANDFILL INC FROM WASATCH REGIONAL LANDFILL INC S OWN NEGLIGENCE WHERE SAID NEGLIGENCE IS AN ALLEGED OR ACTUAL CONCURRING PROXIMATE CAUSE OF ANY ALLEGED THIRD PARTY HARM

3 21 3 THE INDEMNITY PROVISION PROVIDED HEREIN SHALL HAVE NO APPLICATION TO ANY CLAIM OR DEMAND WHERE BODILY INJURY DEATH OR DAMAGE RESULTS ONLY FROM THE SOLE NEGLIGENCE OF WASATCH REGIONAL LANDFILL INC UNMIXED WITH ANY FAULT OF THE CONTRACTOR

3 21 4 NOTWITHSTANDING ANYTHING HEREIN TO THE CONTRARY THE LIABILITY OF THE CONTRACTOR UNDER THIS INDEMNITY PROVISION SHALL NOT EXCEED $1 000 000 PER OCCURRENCE

3 21 5 IN THE EXECUTION OF THE CONTRACT THE CONTRACTOR MUST COMPLY WITH ALL APPLICABLE LOCAL STATE AND FEDERAL LAWS INCLUDING BUT NOT LIMITED TO LAWS CONCERNED WITH LABOR, SAFETY MINIMUM WAGES AND THE ENVIRONMENT THE CONTRACTOR SHALL MAKE HIMSELF FAMILIAR WITH AND AT ALL TIMES SHALL OBSERVE AND COMPLY WITH ALL FEDERAL STATE AND LOCAL LAWS ORDINANCES AND REGULATIONS WHICH IN ANY MANNER AFFECT THE CONDUCT OF THE WORK, AND SHALL INDEMNIFY AND SAVE HARMLESS WASATCH REGIONAL LANDFILL INC AND THEIR REPRESENTATIVES AGAINST ANY CLAIM ARISING FROM VIOLATION OF ANY SUCH LAW ORDINANCE OR REGULATION BY HIMSELF OR BY HIS SUBCONTRACTOR OR HIS EMPLOYEES

3 21 6 IF AND ONLY IF APPLICABLE LAWS AND REGULATIONS PROHIBIT OR LIMIT OWNER S RIGHT TO REQUIRE CONTRACTOR TO INDEMNIFY OWNER AND ENGINEER AND THEIR CONSULTANTS AGENTS AND EMPLOYEES FROM AND AGAINST ALL CLAIMS DAMAGES LOSSES AND EXPENSES ARISING PARTIALLY FROM THEIR OWN NEGLIGENCE CONTRACTOR'S INDEMNIFICATION OBLIGATIONS WITH RESPECT TO SUCH CLAIMS DAMAGES LOSSES AND EXPENSES SHALL BE REDUCED SO THAT CONTRACTOR AND THE INDEMNIFIED PARTIES SHALL EACH BEAR A SHARE OF ANY RESPONSIBILITY FOR SUCH CLAIMS DAMAGES LOSSES AND EXPENSES WHICH IS PROPORTIONATE TO THEIR RESPECTIVE NEGLIGENCE *(CONCURRNET NEGLIGENCE DOES NOT INCLUDE DESIGN)*

ARTICLE 4 ADMINISTRATION OF THE CONTRACT

4 1 *DEFINITIONS*

4 1 1 *Wasatch Regional Landfill Inc Project Manager* The individual designated in the Agreement, authorized to represent Wasatch Regional Landfill Inc and acting directly or through the Project Engineer Site Manager Architect/Engineer or Subconsultants

4 1 2 *Project Engineer* The authorized representative of the Wasatch Regional Landfill Inc Project Manager for administration of the Project

4 1 3 *Site Manager* The authorized on-site representative of the Wasatch Regional Landfill Inc Project Manager for assistance to the Project Engineer in administration and inspection of the Work

4 1 4 *Architect/Engineer* The individual who is lawfully licensed to practice architecture or engineering and is under contract to Wasatch Regional Landfill Inc to provide professional services as defined in the Contract Documents under die direction of the Wasatch Regional Landfill Inc Project Manager and in

making recommendations to Wasatch Regional Landfill Inc Project Manager The term Architect/Engineer means the architect or engineer or his or her authonzed representative When an Architect/Engineer is not employed for admmistration of the Contract, the Project Engineer will perform the duties and responsibilities designated m the Contract Documents for the Architect/Engmeer in addition to the usual duties of the Project Engineer

4 1 5 *Subconsultant* The individual under contract to Wasatch Regional Landfill Inc or the Architect/Engmeer to provide professional support services such as but not limited to control point surveying construction monitonng and matenals testmg under the direction of Wasatch Regional Landfill Inc or the Architect/Engineer and in making recommendations to Wasatch Regional Landfill Inc The term Subconsultant means the subconsultant or his or her authorized representative

4 1 6 *Underground Facilities* Pipes conduits ducts cables wires manholes vaults tanks tunnels or other such facilities or attachments and encasements containing such facilities which exist underground for electncity telephone cable television traffic control or other communications systems pipes conveying gases steam, water liquid petroleum products sewage storm drainage or other liquids

4 1 7 A single individual in the employ of Wasatch Regional Landfill Inc may concurrently fill and perform the required duties of more than one of the positions of Wasatch Regional Landfill Inc Project Manager Wasatch Regional Landfill Inc Project Engineer and Site Manager

4 2 *CONTRACT ADMINISTRATION*

4 2 1 The Wasatch Regional Landfill Inc Project Manager will provide administration of the Contract as descnbed in the Contract Documents and will be Wasatch Regional Landfill Inc representative dunng constmction and from time to time dunng the correction penod descnbed in Subparagraph 12 2 2

4 2 2 The Wasatch Regional Landfill Inc Project Manager or his designated representative will not have control over or charge of and will not be responsible for constmction means methods techniques sequences or procedures or for safety precautions and programs in connection with the Work, smce these are solely Contractor's responsibility as provided in Paragraph 3 3 and Article 10 Wasatch Regional Landfill Inc Project Manager or designated representative of Wasatch Regional Landfill Inc Project Manager will not have control over or charge of and will not be responsible for acts or omission of Contractor Subcontractor or their agents or employees or of any other persons performing portions of the Work

4 2 3 Wasatch Regional Landfill Inc Project Manager or his designated representative has the right to attend project meetings and visit the site at intervals appropnate to the vanous stages of constmction to observe the progress and quality of the executed Work and to determine in general if the Work is being performed in a manner indicating that the Work, when completed will be in accordance with the Contract Documents The Wasatch Regional Landfill Inc Project Manager will not be required to make exhaustive or continuous on-site mspections to check the quality or quantity of the Work.

4 2 4 Wasatch Regional Landfill Inc Project Manager or his designated representative will review and approve or take other appropnate action upon Contractor's submittals such as Shop Drawmgs Product Data, and Samples but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents

4 2 4 1 Review of such submittals is not conducted for the purpose of determming the accuracy and completeness of other details such as dimensions and quantities or for substantiating instmctions for installation or performance of equipment or systems all of which remain the responsibility of Contractor

4 2 4 2 The Wasatch Regional Landfill Inc Project Manager's designated representative's review of submittals shall not relieve Contractor of obligations under Paragraphs 3 3 3 8 and 3 14 The review will not constitute approval of safety precautions or unless otherwise specifically stated by the Wasatch Regional Landfill Inc Project Manager of any constmction means methods techniques sequences or procedures The Wasatch Regional Landfill Inc Project Manager's review of a specific item shall not indicate approval of an assembly of which the item is a component

4 2 5 The Wasatch Regional Landfill Inc Project Manager will prepare Change Orders and Work Change Directives and may authonze minor changes in the Work as provided in Paragraph 7 5

4 2 6 Based on field observations and evaluations the Wasatch Regional Landfill Inc Project Manager will process Contractor's Progress Payments will certify the amounts due the Contractor and will issue Certificates for Payment in such amounts

4 2 7 The Wasatch Regional Landfill Inc Project Manager will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion and will receive for Wasatch Regional Landfill Inc review and records written warranties and related documents required by the Contract and assembled by Contractor The Wasatch Regional Landfill Inc Project Manager will issue a final Certificate for Payment upon compliance with requirements of the Contract Documents

4 2 8 The Wasatch Regional Landfill Inc Project Manager will interpret and decide matters concerning perfonnance under and requirements of the Contract Documents on written request from Contractor The Wasatch Regional Landfill Inc Project Manager's response to such requests will be made with reasonable promptness and within time limits agreed upon Interpretations and decisions of the Wasatch Regional Landfill Inc Project Manager will be consistent with the intent of and reasonably inferable from the Contract Documents and will be in writing or in the form of drawings

4 2 9 The Wasatch Regional Landfill Inc Project Manager has authority to reject Work which does not conform to Contract Documents

4 2 10 Whenever the Wasatch Regional Landfill Inc Project Manager considers it necessary or advisable for implementation of the intent of the Contract Documents Wasatch Regional Landfill Inc Project Manager has authority to require additional inspection or testing of the Work in accordance with Subparagraphs 13 5 3 and 13 5 4 whether or not such Work is fabricated installed or completed

4 2 11 Neither the authority of Wasatch Regional Landfill Inc Project Manager nor a decision made in good faith to exercise or not to exercise such authority under this Article 4 shall give rise to a duty or responsibility of the Wasatch Regional Landfill Inc Project Manager to Contractor Subconfractors or their agents or employees or to other persons performing portions of the Work

4 3 *COMMUNICATIONS IN CONTRACT ADMINISTRATION*

4 3 1 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized by Wasatch Regional Landfill Inc Project Manager Contractor communication shall be with Wasatch Regional Landfill Inc Project Manager Communications by and with the Architect/Engineer shall be through the Wasatch Regional Landfill Inc Project Manager Communication with Subconsultants shall be through the Wasatch Regional Landfill Inc Project Manager Communications with Subcontractors and material suppliers shall be through Contractor Communications by and with separate contractors shall be through the Wasatch Regional Landfill Inc Project Manager

4 4 *CLAIMS*

4 4 1 *Definition* A Claim is a demand or assertion by Contractor seeking, as a matter of right, adjustment or interpretation of Contract terms payment of money extension of time or other relief with respect to terms of the Contract The term Claim also includes other disputes and matters in question between Wasatch Regional Landfill Inc and the Contractor arising out of or relating to the Contract Claims must be made by written notice The responsibility to substantiate Claims by Contractor shall rest with the Contractor

4 4 2 *Decision of the Wasatch Regional Landfill Inc Project Manager* Claims shall be referred to the Wasatch Regional Landfill Inc Project Manager for action as provided in Paragraph 4 5 A presentation of a Claun and a decision by the Wasatch Regional Landfill Inc Project Manager as provided m Subparagraph 4 5 4 shall be required as a condition precedent to litigation of a Claim between Contractor and Wasatch Regional Landfill Inc as to all such matters arising prior to the date the final payment is due regardless of whether such matters relate to execution and progress of the Work or the extent to which the Work has been completed

4 4 2 1 The decision by the Wasatch Regional Landfill Inc Project Manager in response to a Claim shall not be a condition precedent to litigation in the event the Wasatch Regional Landfill Inc Project Manager has failed to render a decision under Subparagraphs 4 5 1 or 4 5 4 within agreed time limits

4 4 3 *Time Limits on Claims* Claims by Contractor must be made within 30 days after occurrence of the event giving rise to such Claim

4 4 4 Continuing *Contract Performance* Pending final solution of a Claim, unless otherwise agreed in writing, Contractor shall proceed diligently with the performance of the Contract and Wasatch Regional Landfill Inc shall continue to make payments in accordance with Contract Documents

4 4 4 1 Pending final resolution of a Claim, and during investigation of conditions Contractor shall be responsible for the safety and protection of the physical properties and conditions at the site

4 4 5 *Claims for Concealed or Unknown Conditions*

4 4 5 1 Concealed or unknown physical conditions include utility lines man made structures, storage facilities hazardous substance and the like but do not include naturally occurring soil conditions conditions arising from groundwater rain or flood Contractor operations or the failure of Contractor to properly protect and safeguard subsurface facilities

4 4 5 2 If conditions are encountered at the worksite which are subsurface Underground Facilities or otherwise concealed or unknown conditions which differ materially from

1 those indicated by Contract Documents, or
2 conditions which Contractor could have discovered through site inspection geotechnical testing, or otherwise

then notice shall be given by Contractor to the Wasatch Regional Landfill Inc Project Manager in writing before the condition is disturbed but in no case later than 21 days after Contractor's first observation of the condition Contractor's failure to provide notice as provided herein shall constitute waiver of Claim

4 4 5 3 If the Wasatch Regional Landfill Inc Project Manager determines that conditions differ materially and cause an increase or decrease in Contractor's cost or time required for performance of any part of the Work, Wasatch Regional Landfill Inc Project Manager will recommend an adjustment m the Contract Price or the Contract Time or both as provided in Article 7 Changes in the Work If the Wasatch Regional Landfill Inc Project Manager determines that the conditions at the site are not materially different and that no change m the Contract Price or Contract Time is justified the Wasatch Regional Landfill Inc Project Manager shall so notify Contractor in writing, stating the reasons Claims by Contractor in opposition to such determination must be made within 21 days after Wasatch Regional Landfill Inc Project Manager has given notice of the decision If Wasatch Regional

Landfill Inc and Contractor cannot agree on an adjustment to Contract Price or the Contract Time the adjustment shall be subject to further proceedings pursuant to Paragraph 4 5

4 4 6 *Claims for Additional Cost* If Contractor wishes to make Claim for an increase in the Contract Price written notice shall be given before proceeding to execute the Work Prior notice is not required for Claims relating to an emergency endangering life or property arising under Paragraph 10 4

4 4 6 1 If Contractor believes additional cost is involved for reasons including but not limited to

1 a written interpretation of the Wasatch Regional Landfill Inc Project Manager
2 an order by Wasatch Regional Landfill Inc to stop the Work when the Contractor is not at fault
3 failure of Wasatch Regional Landfill Inc to make payment
4 suspension of Work by Wasatch Regional Landfill Inc
5 termination of the Contract by Wasatch Regional Landfill Inc or
6 other provision herein

Claims shall be filed in accordance with the procedure established herein

4 4 6 2 No increase in Contract Price will be allowed for delays or hindrances to the Work, except for direct and unavoidable extra costs to Contractor caused by the failure of Wasatch Regional Landfill Inc to provide information or material if any which is to be provided by Wasatch Regional Landfill Inc under the terms of this Contract Any such price increase shall be subject to the provisions of Article 7

4 4 6 3 In no instance will Wasatch Regional Landfill Inc be deemed liable for claims for delay when the Date of Substantial Completion occurs prior to the expiration of the Contract Time

4 4 7 *Claims for Additional Time* If Contractor wishes to claim an increase in the Contract Time written notice shall be given as provided in Paragraph 8 3 In the case of continuing delay only one Claim is necessary

4 4 8 *Claims for Injury or Damage to Person or Property* If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party s employees or agents or of others for whose acts such party is legally liable written notice of such injury or damage whether or not insured shall be given to the other party within a reasonable time not exceeding 21 days after the first observance The notice shall provide sufficient detail to enable the other party to investigate the matter If a Claim for additional cost or additional time due to damage or injury is to be asserted it shall be filed as provided in Subparagraphs 4 4 6 or 4 4 7

4 5 *RESOLUTION OF CLAIMS*

4 5 1 The Wasatch Regional Landfill Inc Project Manager will review Claims and take one or more of the following preliminary actions within 10 days of receipt of a Claim

1 request additional supporting data from the Contractor
2 submit a schedule to Contractor indicating when the Wasatch Regional Landfill Inc Project Manager expects to take action
3 reject the Claim in whole or in part, stating reasons for rejection
4 recommend approval of the Claim or
5 suggest a compromise

The Wasatch Regional Landfill Inc Project Manager may also but is not obligated to notify the Surety of the nature and amount of the Claun

4 5 2 If a Claim has been resolved the Wasatch Regional Landfill Inc Project Manager will prepare or obtain appropnate documentation

4 5 3 If a Claim has not been resolved the Contractor shall within 10 days after receipt of the Wasatch Regional Landfill Inc Project Manager's preliminary response take one or more of the following actions

1 submit additional supporting data requested by the Wasatch Regional Landfill Inc Project Manager
2 modify the initial Claim, or
3 notify the Wasatch Regional Landfill Inc Project Manager that the initial Claim stands

4 5 4 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by Contractor or requested by the Wasatch Regional Landfill Inc Project Manager the Wasatch Regional Landfill Inc Project Manager will render a written decision relative to the Claim, including any change in the Contract Price or the Contract Time or both The Wasatch Regional Landfill Inc Project Manager may but is not obligated to notify the Surety and request the Surety s assistance in resolving the controversy Wasatch Regional Landfill Inc Project Manager's decision shall be final and binding

ARTICLE 5 SUBCONTRACTORS AND SUPPLIERS

5 1 *DEFINITIONS*

5 1 1 *Subcontractor* A Subcontractor is a person or entity who has a direct or indirect contract with the Contractor or is a person or entity who has a direct or indirect contract with another Subcontractor to perform a portion of the Work at the site The term Subcontractor is referred throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor The term Subcontractor' does not include a separate contractor or Subcontractor of a separate contractor

5 1 2 *Supplier* A Supplier is a manufacturer distributor materialman or vendor having a direct agreement with the Contractor or a Subcontractor for furnishing materials equipment or services

5 2 *AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK*

5 2 1 After receipt of Notice of Intent to Award and within the time period stated in Document 00450 Post Bid Procedures Contractor shall submit in writing to the Wasatch Regional Landfill Inc Project Manager the names of Subcontractors and Suppliers proposed for each principal portion of the Work, with a description of the work The Wasatch Regional Landfill Inc Project Manager will reply to Contractor in writing stating whether or not Wasatch Regional Landfill Inc after due investigation has reasonable objection to any such proposed person or entity Failure of the Wasatch Regional Landfill Inc Project Manager to reply within seven days shall constitute notice of no reasonable objection

5 2 2 Contractor shall not contract with a proposed Subcontractor or Supplier to whom the Wasatch Regional Landfill Inc Project Manager has made reasonable and timely objection

5 2 3 If the Wasatch Regional Landfill Inc Project Manager has reasonable objection to a person or entity proposed by Contractor the Contractor shall propose another to whom Wasatch Regional Landfill Inc has no reasonable objection

5 2 4 The Contract Price will be adjusted by the difference in the cost caused by such substitution of a Subcontractor or Supplier and an appropriate Change Order will be issued

5 2 5 Contractor shall execute contracts with Suppliers and approved Subcontractors within 30 days after the date of the notice to proceed

5 2 6 Contractor shall notify Wasatch Regional Landfill Inc Project Manager of any proposed change of a Subcontractor or Supplier previously accepted by Wasatch Regional Landfill Inc

5 2 7 Contractor shall not be required to employ any Subcontractor Supplier or other persons or entities against whom Contractor has reasonable objection

5 3 *CONTRACTOR RESPONSIBILITY FOR SUBCONTRACTORS*

5 3 1 Contractor shall be fully responsible to Wasatch Regional Landfill Inc as may be required by laws and regulations for all acts and omissions of the Subcontractors Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with Contractor

ARTICLE 6 CONSTRUCTION BY WASATCH REGIONAL LANDFILL INC OR BY SEPARATE CONTRACTORS

6 1 *WASATCH REGIONAL LANDFILL INC RIGHT TO PERFORM CONSTRUCTION AND TO AWARD SEPARATE CONTRACTS*

6 1 1 Wasatch Regional Landfill Inc reserves the right to perform construction operations related to the Project with Wasatch Regional Landfill Inc own forces and to award separate prime contracts in connection with other portions of the Project or other construction or operations on the site under conditions of the Contract identical or substantially similar to these including those portions related to insurance and waiver of subrogation If Contractor claims that delay or additional cost is involved because of such action by Wasatch Regional Landfill Inc Contractor shall make a Claim as provided elsewhere in the Contract Documents

6 1 2 When separate contracts are awarded for different portions of the construction or operations at the site the term Contractor in the Contract Documents in each case shall mean the entity which executes each separate agreement

6 1 3 Unless otherwise provided in the Contract Documents when Wasatch Regional Landfill Inc performs construction or operations related to the Project with Wasatch Regional Landfill Inc own forces Wasatch Regional Landfill Inc shall have the same rights which apply to Contractor under the Conditions of the Contract

6 2 *COORDINATION*

6 2 1 Wasatch Regional Landfill Inc shall provide for coordination of the activities of Wasatch Regional Landfill Inc own forces and of each separate contractor with the Work of Contractor who shall cooperate with them Contractor shall participate with other separate contractors and Wasatch Regional Landfill Inc in reviewing their construction schedules when directed to do so Contractor shall make any revisions to the construction schedule and the Contract Price deemed necessary after a joint review and mutual agreement The construction schedules shall then constitute the schedules to be used by Contractor separate contractors and Wasatch Regional Landfill Inc until subsequently revised

6 3 *MUTUAL RESPONSIBILITY*

6 3 1 Contractor shall afford to Wasatch Regional Landfill Inc and to separate contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities and shall coordinate the construction and operations with other contractors as required by Contract Documents

6 3 2 If part of Contractor's Work depends on proper execution of construction or operations by Wasatch Regional Landfill Inc or a separate contractor Contractor shall prior to proceeding with the portion of the Work, inspect such other work and promptly report to the Wasatch Regional Landfill hic Project

Manager apparent discrepancies or defects in such other construction that would render it unsuitable for such proper execution of the Work Failure of the Contractor to so report shall constitute an acknowledgment that Wasatch Regional Landfill Inc or separate contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work, except as to discrepancies or defects not then reasonably discoverable

6 3 3 Costs caused by delays or by improperly timed activities or non conforming construction shall be borne by the entity responsible therefore

6 3 4 Contractor shall promptly remedy damage caused by Contractor to completed or partially completed construction or to property of Wasatch Regional Landfill Inc or separate contractor

6 3 5 Each separate contractor shall have the same responsibilities for cutting and patching as are described in Paragraph 3 16

6 4 *WASATCH REGIONAL LANDFILL INC RIGHT TO CLEAN UP*

6 4 1 If a dispute arises among the Contractor separate contractors and Wasatch Regional Landfill Inc as to responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish as described in Paragraph 3 17 Wasatch Regional Landfill Inc may clean up and allocate the cost among those responsible as the Wasatch Regional Landfill Inc Project Manager determines

ARTICLE 7 CHANGES IN THE WORK

7 1 *CHANGES*

7 1 1 Changes within the scope of the Work may be accomplished after execution of the Agreement without invalidating the Contract and without notice to Contractor's Surety Such changes may be accomplished by Change Order Work Change Directive or order for a minor change in the Work, subject to the limitations in this Article 7 and elsewhere in the Contract Documents

7 1 2 Contractor shall proceed promptly to execute changes in the Work unless otherwise provided in the Change Order Work Change Directive or order for a minor change in the Work

7 2 *CHANGE ORDERS*

7 2 1 A Change Order is a written instrument prepared by the Wasatch Regional Landfill Inc Project Manager and signed by the Wasatch Regional Landfill Inc Project Manager and Contractor stating their agreement upon the following

1 a change in the Work
2 the amount of adjustment in the Contract Price if any and
3 the extent of the adjustment in the Contract Time if any

7 3 *WORK CHANGE DIRECTIVES*

7 3 1 The Wasatch Regional Landfill Inc Project Manager may by Work Change Directive order changes in the Work within the general scope of the Contract consisting of additions deletions or other revisions stating a proposed basis for adjustment if any in contract Price or Contract Time or both Contractor shall carry out such directive promptly

7 3 2 A Work Change Directive cannot change the Contract Price or the Contract Time but is evidence that the parties agree that the change ordered by the Directive will be incorporated in a subsequently issued Change Order as to its effect, if any on the Contract Price or the Contract Time

7 3 3 A Work Change Directive signed by Contractor indicates the agreement of Contractor of the terms therewith including adjustment in Contract Price and Contract Time or the method for determining them Agreement on adjustments in Contract Price and Contract Time shall be immediately recorded as a Change Order

7 3 4 A Work Change Directive shall be used in the absence of total agreement on the terms of a Change Order

7 4 *ADJUSTMENTS IN CONTRACT PRICE*

7 4 1 Adjustments in Contract Price shall be based on one of the following methods

1 mutual acceptance of a fixed price properly itemized and supported by sufficient substantiating data to permit evaluation
2 unit prices stated in the Contract Documents or subsequently agreed upon
3 cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee or
4 as provided in Subparagraph 7 4 2

7 4 2 If Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Price the method and the adjustment shall be determined by the Wasatch Regional Landfill Inc Project Manager on the basis of reasonable expenditures and savings of those performing the work attributable to the change including, in case of an increase in the Contract Price an allowance for labor burden and for overhead and profit in the maximum percentages stated in Supplementary Conditions

7 4 2 1 In such case Contractor shall keep and present, in such form as the Wasatch Regional Landfill Inc Project Manager may prescribe an itemized accounting together with appropriate supporting data Failure to submit such itemized accounting and supporting data within 21 days of a request for such data by the Wasatch Regional Landfill Inc Project Manager shall constitute waiver of future Claims under this Subparagraph

7 4 2 2 Unless otherwise provided in the Contract Documents costs for the purposes of this Subparagraph shall be limited to the following

1 costs of labor including labor burden as stated in Supplementary Conditions for social security unemployment insurance customary and usual fringe benefits required by agreement or custom and workers' compensation insurance
2 costs of materials, supplies and equipment, including cost of transportation whether incorporated or consumed
3 rental costs of machinery and equipment, exclusive of hand tools whether rented from Contractor or others with prior approval of the Wasatch Regional Landfill Inc Project Manager
4 costs of premiums for all bonds and insurance and permit fees related to the Work
5 additional costs of supervision and field office personnel directly attributable to the change and
6 allowances for overhead and profit

7 4 3 The amount of credit to be allowed by Contractor to Wasatch Regional Landfill Inc for a deletion or change which deletion or change results in a net decrease in the Contract Price shall be determined in accordance with Paragraphs 7 4 1 7 4 2 7 4 2 1 and 7 4 2 2 When both additions and credits covering related Work or substitutions are involved in a change the allowance for overhead and profit shall be figured on the basis of net increase if any with respect to that change

7 4 4 When Contractor agrees with the determination made by the Wasatch Regional Landfill Inc Project Manager concerning adjustments in the Contract Price and Contract Time or Wasatch Regional Landfill Inc and Contractor otherwise reach agreement upon the adjustments such agreement shall be immediately recorded by preparation and execution of an appropriate Change Order

7 5 *MINOR CHANGES IN THE WORK*

7 5 1 The Wasatch Regional Landfill Inc Project Manager will have the authority to order minor changes in the Work not involving adjustment in the Contract Price or the Contract Time and not inconsistent with the intent of the Contract Documents Such changes shall be affected by written order and shall be binding on Wasatch Regional Landfill Inc and Contractor Contractor shall carry out such written orders promptly

ARTICLE 8 TIME

8 1 *DEFINITIONS*

8 1 1 *Contract Time* Unless otherwise provided, Contract Time is the number of calendar days stated in the Agreement, including authorized adjustments allotted in Contract Documents for Substantial Completion of the Work

8 1 2 *Day* As used in the Contract Documents the term shall mean any calendar day of 24 hours measured from midnight to the next midnight unless otherwise specifically defined

8 1 3 *Effective Date of the Agreement* The date indicated in the Agreement on which it becomes effective but if no such date is indicated it means the date on which the Agreement was countersigned by Wasatch Regional Landfill Inc

8 1 4 *Date of Commencement of the Work* The date established in the Notice To Proceed The date shall not be changed by the failure to act of the Contractor or of persons or entities for whom Contractor is responsible

8 1 5 *Holiday* The date established by Wasatch Regional Landfill Inc as a holiday

8 1 6 *Date of Substantial Completion* The date certified by the Wasatch Regional Landfill Inc Project Manager in accordance with Subparagraph 9 10 1

8 2 *PROGRESS AND COMPLETION*

8 2 1 Time limits stated in the Contract Documents are the essence of the Contract By executing the Agreement, Contractor confirms that the Contract Time is a reasonable period for performing the Work

8 2 2 *Computation of Time* In computing any period of time prescribed or allowed by these General Conditions the day of the act, event, or default after which the designated period of time begins to run is not to be included The last day of the period so computed is to be included unless it is a Sunday or Holiday in which event the period runs until the end of the next day which is not a Sunday or Holiday Sundays and Holidays are considered to be calendar days and are to be included in all other time computations relative to the Contract Time

8 2 3 Contractor shall not knowingly except by agreement or instruction of the Wasatch Regional Landfill Inc Project Manager in writing, commence operations on the site or elsewhere prior to the effective date of insurance required by Article 11 The date of commencement of the Work shall not be changed by the effective date of such insurance

8 2 4 Contractor shall proceed expeditiously and without interruption with adequate forces and shall achieve Substantial Completion within the Contract Time

8 2 5 Should progress of the Work fall behind the Construction Schedule except for reasons stated in Paragraph 8 3 1 Contractor shall submit a revised Construction schedule to Wasatch Regional Landfill Inc Project Manager for approval Contractor shall take action necessary to restore progress to the revised Construction Schedule and shall work such hours including night shifts and lawful overtime operations as necessary to achieve Substantial Completion within the Contract Time

8 2 6 Except in connection with safety or protection of persons or Work or property at the site or adjacent thereto and except as otherwise indicated in the Contract Documents all Work at the site shall be performed Monday through Saturday between the hours of 7 00 am and 7 00 pm Performance of work between 7 00 pm and 7 00 am, and on Sunday or Holiday shall not be permitted without consent of the Wasatch Regional Landfill Inc Project Manager given after 24 hour prior written notice fiom Contractor

8 2 7 The Wasatch Regional Landfill Inc Project Manager by Work Change Directive may direct Contractor to take such measures as necessary to expedite constmction to achieve Substantial Completion prior to expiration of Contract Time When the constmction time is expedited solely for the convenience of Wasatch Regional Landfill Inc and not due to Contractor's failure to prosecute timely completion of the Work, then Contractor shall be entitled to an adjustment in the Contract Price equal to actual additional net costs in accordance with Article 7

8 3 *DELAYS AND EXTENSIONS OF TIME*

8 3 1 Contractor may request an extension of Contract Time for any delay to the performance of the Agreement that arises from causes beyond the control and without the fault or negligence of Contractor Examples of these causes are

1 Acts of God or of the public enemy
2 Acts of the Government in either its sovereign or contractual eapacity
3 Fires,
4 Floods
5 Epidemics
6 Quarantine restrictions
7 Strikes
8 Freight embargoes and
9 Unusually severe weather

Contractor may request an extension of Contract Time for delay if caused by the failure of a Subcontractor or Supplier at any tier to perform or make progress only if the cause of the failure is beyond the confrol of both Contractor and the Subcontractor or Supplier

8 3 2 Claims relating to time shall be made in accordance with applicable provisions of Subparagraph 4 4 8

8 3 3 Any Claim for extending or shortening the Contract Time shall be based on written notice promptly delivered by the party making the Claim to the other party The Claim shall accurately descnbe the occurrence generatmg the Claun, and a statement of the probable effect on progress of the Work For Claims where Contract Documents require critical path method schedules Contractor shall provide a revised critical path method schedule

8 3 4 Claims for extension of time will be considered only when a written Claim is filed within the time limits stated in Subparagraph 4 4 4 followmg the last date of the occurrence

8 3 5 The notice shall be accompanied by the claimant s written statement that the adjustment claimed is the entire adjustment to which the claimant is entitled as a result of the occurrence of said event When the parties cannot agree Claims for adjustment in the Contract Time shall be determined by Wasatch Regional Landfill Inc Project Manager in accordance with Subparagraph 4 5 4

ARTICLE 9 PAYMENTS AND COMPLETION

9 1 *DEFINITIONS*

9 1 1 *Contract Price* Contract Price is that amount stated m the Agreement and including authorized adjustments is the total amount payable by Wasatch Regional Landfill Inc to Contractor for performance of the Work under Contract Documents

9 1 2 *Lump Sum* The single amount stated m the bid for completion of all Work to be performed for the entire Contract, or to be performed for a designated portion of the Contract

9 1 3 *Unit Price* The amount stated m the bid for an individual measurable item of work, which when multiplied by the actual quantity incorporated in the Work, amounts to the full compensation for completion of the item including work incidental to it

9 2 *UNIT PRICE WORK*

9 2 1 Where the Agreement provides that all or part of the Work is based on Unit Prices, initially the Contract Price will include for all Unit Price work, an amount equal to the sum of the established Unit Prices for each separately identified item of Unit Price work times the estimated quantity of each item listed in the Agreement

9 2 2 Each unit price shall include an amount to cover Contractor's overhead and profit for each separately identified item

9 2 3 *Unit Price Quantities* The quantities indicated in the Agreement are approximations made by Wasatch Regional Landfill Inc for contracting purposes No Claim shall be made against Wasatch Regional Landfill Inc for excess or deficiency therein Payment at the prices stated in the Agreement shall be in full for the completed Work, and will cover materials supplies labor tools machinery and all other expenditures incidental to satisfactory completion of the Work

9 2 4 Wasatch Regional Landfill Inc may increase or decrease quantities of Work Contractor will be entitled to payment for the actual quantities of items provided at the unit prices set forth in the Agreement

9 3 *SCHEDULE OF VALUES FOR LUMP SUM WORK*

9 3 1 For work contracted on a lump sum basis ten days before the first Application for Payment, the Contractor shall

submit to Wasatch Regional Landfill Inc Project Manager a Schedule of Values allocated to various portions of the Work, prepared in such form and supported by such data as the Wasatch Regional Landfill Inc Project Manager may require to substantiate its accuracy This schedule as approved by the Wasatch Regional Landfill Inc Project Manager shall be used as a basis for reviewing Contractor's Applications for Payment for lump sum work

9 4 *APPLICATIONS FOR PAYMENT*

9 4 1 Each month not later than the tenth day of the month the Contractor shall submit to the Wasatch Regional Landfill Inc Project Manager an itemized application for payment for work completed during the previous month

9 4 2 Such application shall be supported by such data substantiating Contractor's right to payment as the Wasatch Regional Landfill Inc Project Manager may require

9 4 3 Subject to provisions of the Contract Documents the amount of each Application for Payment shall be compiled as follows

1 The Contract Price of the Work completed from commencement of the Project through the end of the previous month as determined by multiplying the number of units completed of each item of the Work by the contract unit price of that item, or by multiplying the percentage of completion of each portion of the Work by the Lump Sum Price allocated to that portion of the Work listed in the Schedule of Values as applicable
2 Plus that portion of the Contract Price properly substantiated by certified copies of invoices and freight bills for non perishable materials and equipment not yet incorporated in the Work but delivered and suitably stored at the site or at another location agreed to by the Wasatch Regional Landfill Inc Project Manager in writing, for subsequent incorporation into the completed construction less 15 percent
3 Less retainage on the completed work of 5% for progress payments 2% after Substantial Completion of the Work, and 0% for Final Payment
4 Less Penalties for Delay as applicable
5 Less the total of previous payments made by Wasatch Regional Landfill Inc

9 5 *RECOMMENDATIONS FOR PAYMENT*

9 5 1 The Wasatch Regional Landfill Inc Project Manager will within 10 days after receipt of Contractor's Application for Payment,

1 Issue a Recommendation for Payment for the full amount of the Application or
2 Issue a Recommendation for Payment for a portion of the amount of the Application and request the Contractor to make corrections or provide additional information to substantiate the remaining portion Contractor shall make the corrections and provide the additional information and resubmit the Application for Payment for the remaining portion or
3 Return the Application to the Contractor for corrections or additional information Contractor shall make the corrections and provide the additional information and resubmit the Application for Payment or
4 Decline to recommend payment on the basis of the provisions in Paragraph 9 6

9 5 2 Unless otherwise provided in Contract Documents payments made on account of operations completed and for materials and equipment stored on or off the site shall be conditioned upon compliance by Contractor with procedures satisfactory to Wasatch Regional Landfill Inc Project Manager to establish Wasatch Regional Landfill Inc title to such materials and equipment or otherwise protect Wasatch Regional Landfill Inc interests Procedures shall include applicable insurance storage and transportation to the site for materials and equipment stored off the site Contractor is responsible for maintaining materials and equipment until Substantial Completion of the Work.

9 5 3 Title to all Work covered by the payment passes to Wasatch Regional Landfill Inc at the time of payment

9 6 *DECISIONS TO WITHHOLD RECOMMENDATION*

9 6 1 The Wasatch Regional Landfill Inc Project Manager may decline to recommend payment and may withhold an application for payment in whole or in part to the extent reasonably necessary to protect Wasatch Regional Landfill Inc if in the Wasatch Regional Landfill Inc Project Manager's opinion there is reason to believe that there is

1 non conforming work not remedied
2 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Price
3 damage to Wasatch Regional Landfill Inc or another contractor
4 reasonable evidence Work will not be completed within the Contract Time and that the unpaid balance would not be adequate to cover actual and liquidated damages
5 failure of Contractor to make payments properly to subcontractors or for labor materials or equipment or
6 Contractor's persistent failure to carry out the Work in accordance with the Contract Documents

9 6 2 When the above reasons for withholding recommendation are removed, recommendation will be made for amounts previously withheld

9 7 *PROGRESS PAYMENTS*

9 7 1 Wasatch Regional Landfill Inc will make payment in the amount recommended by Wasatch Regional Landfill Inc

Project Manager within 60 days after the date of receipt of application for payment

9 7 2 Wasatch Regional Landfill Inc has no obligation to pay or to facilitate the payment to a Subcontractor or Supplier except as may otherwise be required by law Contractor will comply with the prompt payment requirements of the place of the project

9 7 2 1 Wasatch Regional Landfill Inc may on request and at the discretion of the Wasatch Regional Landfill Inc Project Manager furnish to any subcontractor if practical information regarding the percentages of completion or the amounts applied for by Contractor and the action taken thereon by Wasatch Regional Landfill Inc on account of Work done by such Subcontractor

9 7 3 A Recommendation for Payment, a progress payment, or partial or entire use or occupancy of the Project by Wasatch Regional Landfill Inc shall not constitute acceptance of work which is not in accordance with the Contract Documents

9 8 *SUBSTANTIAL COMPLETION*

9 8 1 The Date of Substantial Completion of the Work or designated portion thereof is the date certified by the Wasatch Regional Landfill Inc Project Manager that the construction is sufficiently complete in accordance with the Contract Documents so Wasatch Regional Landfill Inc can occupy or utilize the Work or designated portion thereof for the purpose for which it is intended

9 8 2 When Contractor considers that the Work or a portion thereof is substantially complete and Wasatch Regional Landfill Inc agrees Contractor shall prepare and submit to the Wasatch Regional Landfill Inc Project Manager a comprehensive list of items to be completed or corrected Contractor shall proceed promptly to complete and correct the items on the list Failure to include an item on such list does not alter the responsibility of Contractor to complete the Work in accordance with the Contract Documents

9 8 3 Upon receipt of the Contractor's list, the Wasatch Regional Landfill Inc Project Manager will make an inspection to determine whether the Work or designated portion thereof is substantially complete If the Wasatch Regional Landfill Inc Project Manager's inspection discloses any item whether or not included on the Contractor's list, which is not in accordance with the requirements of the Contract Documents Contractor shall before issuance of the Certificate of Substantial Completion complete or correct such item Contractor shall then submit a request for another inspection by the Project Engineer to determine Substantial Completion Should any inspection fail to comply with Contractor's claim of Substantial Completion Wasatch Regional Landfill Inc may recover the costs of reinspection from Contractor

9 8 4 When the Work or designated portion thereof is determined to be substantially complete the Wasatch Regional Landfill Inc Project Manager will prepare a Certificate of Substantial Completion which establishes the Date of Substantial Completion responsibilities of Wasatch Regional Landfill Inc and Contractor for security maintenance heat, utilities damage to the Work, and insurance and shall fix the time within which Contractor shall complete all items on the list accompanying the Certificate Warranties required by the Contract Documents shall commence on the Date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion

9 8 5 Upon Substantial Completion of the Work or designated portion thereof and upon application by Contractor and certification by the Wasatch Regional Landfill Inc Project Manager Wasatch Regional Landfill Inc shall increase payment to Contractor to 98 percent of the Contract Price less accrued Liquidated Damages

9 9 *PARTIAL OCCUPANCY OR USE*

9 9 1 Wasatch Regional Landfill Inc may occupy or use any completed or partially completed portion of the Work at any stage provided such occupancy or use is consented to by Contractor and the insurer Consent of Contractor to partial occupancy or use shall not be unreasonably withheld

9 9 2 Such partial occupancy or use may commence whether or not the portion is substantially complete provided the Wasatch Regional Landfill Inc Project Manager and Contractor execute a Certificate of Partial Occupancy which will establish the date of partial occupancy responsibilities of Wasatch Regional Landfill Inc and Contractor for security maintenance heat, utilities damage to the Work, and insurance Warranties required by the Contract Documents shall commence on the date of partial occupancy unless otherwise provided in the Certificate of Partial Occupancy

9 9 3 When Contractor considers a portion of the occupied Work subsequently complete Contractor shall prepare a list and submit it to the Project Engineer as provided under Subparagraph 9 10 2

9 9 4 Immediately prior to such partial occupancy or use the Project Engineer and Contractor shall jointly inspect the area to be occupied or the portion of the Work to be used in order to determine and record the condition of the Work

9 9 5 Partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with requirements of the Contract Documents

9 9 6 If Wasatch Regional Landfill Inc and Contractor cannot agree on any matter in Paragraph 9 11 the matter shall be subject to resolution pursuant to a Work Change Directive Paragraph 7 3

9 10 *FINAL COMPLETION AND FINAL PAYMENT*

9 10 1 *Date of Final Completion* is the date certified by the Wasatch Regional Landfill Inc Project Manager that, to his best

mformation knowledge and belief constmction is complete m conformance with Contract Documents This includes satisfactory completion of all items listed to be completed or corrected as a part of the Certificate of Substantial Completion and submittal and acceptance by Wasatch Regional Landfill Inc of all closeout submittals required by Contract Documents

9 10 2 Contractor shall review all Contract Documents and inspect the Work Pnor to Contractor notification to Wasatch Regional Landfill Inc Project Manager that Work is complete and ready for final inspection Contractor shall submit an affidavit that the Work has been inspected and the Work is complete in accordance with requirements ofiContract Documents

9 10 3 Withm 15 days after receipt of Contractor's wntten notice that Work is ready for final inspection and acceptance and on receipt of fmal Application for Payment, Wasatch Regional Landfill Inc Project Manager will make such inspection When Wasatch Regional Landfill Inc Project Manager finds the Work acceptable under the Contract Documents and the Work fully performed the Wasatch Regional Landfill Inc Project Manager will issue a final Certificate of Completion stating that to the best of Wasatch Regional Landfill Inc Project Manager's knowledge information and belief the Work has been completed in accordance with terms and conditions of the Contract Documents and will issue a final Recommendation for Payment

9 10 4 Should Work be found not in compliance with requirements of Contract Documents, Wasatch Regional Landfill Inc Project Manager shall notify Contractor m wnting of items of non-compliance Upon correction of such non complying items, Wasatch Regional Landfill Inc Project Manager shall issue a Certificate of Final Completion to Contractor as provided in Paragraph 9 12 3

9 10 5 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Wasatch Regional Landfill Inc Project Manager

1 an affidavit that payrolls invoices for matenals and equipment, and other indebtedness of the Contractor connected with the Work (less amounts withheld by Wasatch Regional Landfill Inc) have been paid or otherwise satisfied and, if required by Wasatch Regional Landfill Inc Project Manager submits further proof including waiver of release of hen or claims from laborers or matenal or equipment suppliers
2 a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently m effect and will not be canceled, or matenally changed until at least 30 days written notice has been given to Wasatch Regional Landfill Inc
3 a wntten statement that Contractor knows of no substantial reason that the insurance will not be renewable to cover the correction and warranty penod required by the Contract Documents
4 consent of Surety to final payment and
5 Maintenance Bond and other required bonds and copies of Record Documents maintenance manuals and tests inspections and approvals

9 10 6 If after Substantial Completion of the Work final completion thereof is matenally delayed through no fault of Contractor or by issuance of Change Orders affectmg fmal completion and the Wasatch Regional Landfill Inc Project Manager so confirms Wasatch Regional Landfill Inc may upon application by Contractor and recommendation by the Wasatch Regional Landfill Inc Project Manager and without termmatmg the Contract make payment of the balance due for that portion of the Work fully completed and accepted

9 10 6 1 If the remaining balance due for Work not fully completed or corrected is less than retainage stipulated m the Contract Documents Contractor shall submit to Wasatch Regional Landfill Inc Project Manager the required bonds and the wntten consent of Surety to payment ofithe balance due for that portion of the Work fully completed and accepted pnor to recommendation of such payment Such payment shall be make under terms and conditions governing fmal payment, except that it shall not constitute a waiver of Claims

9 10 7 Wasatch Regional Landfill Inc shall make final payment to Contractor within 60 days after the Wasatch Regional Landfill Inc Project Manager issues the final Certificate of Completion and the final Recommendation for Payment, subject to limitations if any as stated in the Supplementary Conditions

9 10 8 Acceptance of final payment by Contractor shall constitute a waiver of Claims by the Contractor except those previously made in writing and identified by Contractor as unsettled at the time of final Application for Payment

9 11 *DELAY PENALTIES*

9 11 1 The Contractor the Surety and Wasatch Regional Landfill Inc agree that time is of the essence and that failure to complete the Work within Contract Time will cause damages to Wasatch Regional Landfill Inc and that the actual damages from the harm are difficult to estimate accurately Therefore the Contractor the Surety and Wasatch Regional Landfill Inc agree that Contractor and the Surety shall be liable for and shall pay to Wasatch Regional Landfill Inc a penalty amount stipulated in Supplementary Conditions as penalties for delay and that the amount fixed therein is a reasonable forecast ofjust compensation to Wasatch Regional Landfill Inc resulting from failure to complete the Work withm Contract Time The amount stipulated shall be paid for each and every calendar day of delay beyond the Contract Time until the Work is substantially complete

ARTICLE 10 SAFETY PRECAUTIONS

10 1 *SAFETY PROGRAMS*

10 1 1 Contractor shall be responsible for initiating, maintaining and supervising all safety precautions and programs m connection with the performance of the Contract Contractor

shall submit a safety program to the Wasatch Regional Landfill Inc Project Manager prior to mobilizing the Work, and shall be solely responsible for the safety efficiency and adequacy of the ways means and methods and for any damage which might result from failure or improper constmction maintenance or operation performed by Contractor Contractor shall submit a monthly safety report to the Wasatch Regional Landfill Inc Project Manager

10 2 *'HAZARDOUS SUBSTANCE*

10 2 1 In the event Contractor encounters on the site material which it is reasonable to believe may be a hazardous substance as defined by the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) or any other applicable law or regulation Contractor shall immediately stop Work in the area affected and immediately notify the Wasatch Regional Landfill Inc Project Manager and thereafter confirm such notice m writmg

10 2 2 If in fact, the material is a hazardous substance' the Work in the affected area shall not thereafter be resumed except by Change Order or Work Change Directive and then only if such Work would not violate applicable laws or regulations

10 2 3 If the material is not a "hazardous substance the Work in the affected area shall be resumed

10 2 4 Contractor shall not be required pursuant to Article 7 to perform without consent any Work relating to a hazardous substance except for those hazardous substances specified for use under this Contract

10 3 *SAFETY OF THE ENVIRONMENT PERSONS 'AND PROPERTY*

10 3 1 Contractor shall take reasonable precautions for safety and shall provide reasonable protection to prevent damage injury or loss from all causes to

1 employees performing the Work or on site and other persons who may be affected thereby
2 the Work including materials and equipment to be incorporated therein whether m storage (on or off the site) under care custody or control of Contractor or Subcontractor
3 other property at or adjacent to the site such as trees shmbs lawns walks pavements roadways stmctures utilities and underground facilities not designated for removal or replacement in the course of constmction and
4 Cultural resources and the environment

10 3 2 Contractor shall give notices and comply with applicable laws ordinances mles regulations and lawful orders of public authorities bearing on the safety of persons, property or the environment

10 3 3 Contractor shall erect and maintain as required by existing conditions and performance of the Contract, reasonable safeguards for the safety and protection of persons and property including posting danger signs and other warnings against hazards promulgating safety regulations and notifying owners and users of adjacent sites and utilities

10 3 4 Contractor shall recognize the enviromnental requirements of the Project Disturbed areas shall be strictly limited to boundaries established by the Wasatch Regional Landfill Inc Project Manager Particular attention is drawn to the avoidance of any pollution of on site or adjacent streams sewers wells or other water sources

10 3 5 Contractor shall use best management practices to minunize erosion of soil and excess mnoff of surface or subsurface water from the site or wind blown dust or erosion, during the constmction period

10 3 6 Contractor shall allow no burning on the site shall perform all Work in such a manner as required to mmimize atmospheric pollution by dust or other contaminants and shall control noise

10 3 7 When use or storage of hazardous materials or equipment or unusual methods are necessary for execution of the Work, Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel

10 3 8 Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by Contract Documents) to property referred to in Subparagraphs 10 3 1 2 and 10 3 1 3 caused in whole or m part by the Contractor Subcontractor or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which Contractor is responsible under Subparagraphs 10 3 1 2 and 10 3 1 3 except damage or loss attributable to acts or omissions of Wasatch Regional Landfill Inc Architect/Engineer or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable and not attributable to the fauh or negligence of Contractor The foregoing obligations of the Contractor are in addition to Contractor's obligations under Paragraph 3 21

10 3 9 Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents This person shall be the Contractor's superintendent unless otherwise designated by Contractor to the Wasatch Regional Landfill Inc Project Manager

10 4 *EMERGENCIES*

10 4 1 In an emergency affecting safety of persons or property Contractor shall act at the Contractor's discretion to prevent threatened damage injury or loss Additional compensation or extension of time claimed by Contractor on account of an emergency shall be determined as provided in Article 7

ARTICLE 11 INSURANCE AND BONDS

11 1 *GENERAL INSURANCE REQUIREMENTS*

11 1 1 With no intent to limit Contractor's liability under the indemnification provisions set forth above Contractor covenants to provide and maintain in full force and effect during the term of this Contract and all extensions and amendments thereto at least the following insurance and available limits of liability

11 1 2 If any of the following insurance is written as 'claims made' coverage and Wasatch Regional Landfill Inc is required to be earned as an additional insured then Contractor's insurance shall include a two year extended discovery period after the last date that Contractor provides any work under this Contract

11 1 3 Aggregate" amounts of coverage for purposes of this agreement, are agreed to be the amounts of coverage available during a fixed 12 month policy period

11 2 *INSURANCE TO BE PROVIDED BY CONTRACTOR*

11 2 1 *Risks and Limits of Liability* Contractor shall provide at a minimum the insurance coverages and limits of liability given in the Agreement (*D*ocument 00500)

11 2 2 *Form of Policies* The insurance may be in one or more policies of insurance the form of which is subject to reasonable approval by Wasatch Regional Landfill Inc It is agreed, however that nothing Wasatch Regional Landfill Inc does or fails to do with regard to the insurance policies shall relieve Contractor from its duties to provide the required coverage hereunder and Wasatch Regional Landfill Inc actions or inactions will never be construed as waiving Wasatch Regional Landfill Inc rights hereunder

11 2 3 *Issuers of Policies* The issuer of any policy must have a certificate of authority to transact insurance business in the State of the place of the project Each insurer must be responsible and reputable and must have financial capability consistent with the risks covered Each insurer shall be subject to approval by Wasatch Regional Landfill Inc in Wasatch Regional Landfill Inc sole discretion as to conformance with these requirements pursuant to subparagraph 11 2 2 above

11 2 4 *Insured Parties* Each policy except those for Workers Compensation and Professional Liability must name Wasatch Regional Landfill Inc (and its officers agents and employees) as additional insured parties on the original policy and all renewals or replacements during the term of this Contract Wasatch Regional Landfill Inc status as an additional insured under the Contractor's insurance does not extend to instances of sole negligence of Wasatch Regional Landfill Inc unmixed with any fault of the Contractor

11 2 5 *Deductibles* Contractor shall assume and bear any claims or losses to the extent of any deductible amounts and waives any claim it may ever have for the same against Wasatch Regional Landfill Inc its officers agents or employees

11 2 6 *Cancellation* Each policy must expressly state that it may not be canceled or non renewed unless thirty days' advance notice of cancellation is given in writing to Wasatch Regional Landfill Inc by the insurance company

~~11.2.7 *Subrogation:* Each policy must contain an endorsement to the effect that the issuer waives any claim or right in the nature of subrogation to recover against Wasatch Regional Landfill, Inc., its officers, agents or employees.~~

11 2 8 *Endorsement of Primary Insurance* Each policy must contain an endorsement that such policy is primary insurance to any other insurance available to the Additional Insured with respect to claims arising hereunder

11 2 9 *Liability for Premium* Contractor shall be solely responsible for payment of all insurance premium requirements hereunder and Wasatch Regional Landfill Inc shall not be obligated to pay any premiums

11 3 *PROOF OF INSURANCE*

11 3 1 Prior to commencing any services and at any time during the term of work under this Contract, Contractor shall furnish Wasatch Regional Landfill Inc Project Manager with Certificates of Insurance along with an Affidavit from Contractor confirming that the Certificate accurately reflects the insurance coverage that will be available during the term of the Contract If requested in writing by the Wasatch Regional Landfill Inc *P*roject Manager the Contractor shall furnish the Wasatch Regional Landfill Inc Project Manager with certified copies of Contractor's actual insurance policies Failure of Contractor to provide certified copies as requested may be deemed in Wasatch Regional Landfill Inc discretion to constitute a breach of this Contract

11 3 2 Notwithstanding the proof of insurance requirements set forth above it is the intention of the parties hereto that Contractor continuously and without interruption maintain in force the required insurance coverages set forth above Failure of Contractor to comply with this requirement shall constitute a default of Contractor allowing Wasatch Regional Landfill Inc at its option to immediately suspend or terminate work under this Contract Contractor agrees that Wasatch Regional Landfill Inc shall never be argued to have waived or be estopped to assert its right to terminate this contract hereunder because of any acts or omissions by Wasatch Regional Landfill Inc regarding its review of insurance documents provided by Contractor its agents employees or assigns

11 4 *PERFORMANCE AND PAYMENT BONDS*

11 4 1 For Projects over the value of $25 000 Contractor shall provide surety bonds covering faithful performance of the Contract and payment of obligations arising thereunder as required in Contract *D*ocuments pursuant to the civil statutes of the State of the place of the Project, in the amount of 100 percent of the Contract *P*rice as stipulated in Contract *D*ocuments on the date of execution of the Contract in accordance with the conditions stated on the Performance and *P*ayment Bonds Documents 00610 and

00611 Bonds may be obtained from the Contractor's usual source and the cost thereof shall be included in the Contract Price

11 5 *MAINTENANCE BONDS*

11 5 1 *One Year Maintenance Bond* Contractor shall provide a bond in accordance with the conditions stated on the One Year Maintenance Bond Document 00612 providing for the Contractor's correction replacement, or restoration of any portion of the Work which is found to be not in compliance with requirements of Contract Documents during the one year correction period required in Subparagraph 12 2 2

11 6 *SURETY*

11 6 1 The Surety on the bonds must be a corporate Surety authorized to conduct insurance business in the State of the place of the Project

11 6 1 1 If the Surety on the bond is not listed on the current United States Treasury Department number 570 as having an underwriting capability in at least the amount of the bond and if the bond exceeds 10 percent of the Surety Company s capital and surplus Surety shall submit written documentation of reinsurance or Contractor must provide an additional Surety bond for the bond amount in excess of 10 percent of the original Surety s capital and surplus Documentation of reinsurance shall show that Surety has reinsured the amount of the bond that exceeds 10 percent of its capital and surplus with one or more reinsurers who are duly authorized accredited or trusted to do business in the Sate of the place of the Project Reinsurers shall meet the same requirements as Surety and shall sign Bonds as co surety

11 6 1 2 Each bond must be accompanied by a current power of attorney or other documentary proof that the individual signing the bond on behalf of the Surety has the necessary authority to execute the bond

11 6 2 Upon request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations under the Contract, Contractor shall promptly furnish a copy of the bonds or shall permit a copy to be made

11 7 *DELIVERY OF BONDS*

11 7 1 Contractor shall deliver the required bonds to the Wasatch Regional Landfill Inc Project Manager within the time limits stated in the Notice of Intent to Award, or if the Work is to be commenced prior thereto in response to a letter of intent, Contractor shall submit bonds prior to commencement of the Work

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

12 1 *UNCOVERING OF WORK*

12 1 1 If a portion of the Work, including the work of others is covered by Contractor contrary to the Wasatch Regional Landfill Inc Project Manager's request or to requirements of the Contract Documents Contractor shall uncover such work, if required in writing by the Wasatch Regional Landfill Inc Project Manager for observation by the Wasatch Regional Landfill Inc Project Manager The uncovered work shall be replaced without change to the Contract Price or Contract Time

12 1 2 If a portion of the Work has been covered which the Wasatch Regional Landfill Inc Project Manager has not specifically requested to observe prior to it being covered, Wasatch Regional Landfill Inc Project Manager may request to see such Work and it shall be uncovered by Contractor If such Work is in accordance with the Contract Documents costs of uncovering and replacement shall be charged to Wasatch Regional Landfill Inc by Change Order If such Work is not in accordance with the Contract Documents Contractor shall pay such costs

12 2 *CORRECTION OF WORK*

12 2 1 Contractor shall promptly correct or remove Work rejected by the Wasatch Regional Landfill Inc Project Manager or Work failing to conform to the requirements of the Contract Documents whether observed before or after Substantial Completion and whether or not fabricated, installed, or completed Contractor shall bear costs of correcting such rejected Work, including additional testing and inspections and compensation for Architect/Engineer's or subconsultant s services and expenses made necessary thereby

12 2 2 *One Year Correction Period* If within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Paragraph 9 10 4 or of other applicable special warranty required by Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents Contractor shall correct the Work promptly after receipt of written notice from Wasatch Regional Landfill Inc to do so The period of one year shall be extended with respect to portions of the Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual acceptance of the Work This obligation under this Subparagraph shall survive acceptance of the Work under the Contract and termination of the Contract

12 2 3 Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Wasatch Regional Landfill Inc Project Manager

12 2 4 If Contractor does not proceed with correction of such non conforming Work within the time fixed by written notice from

the Wasatch Regional Landfill Inc Project Manager Wasatch Regional Landfill Inc may correct the non conforming Work in accordance with Paragraph 2 6 or remove non conforming Work and store the salvable materials or equipment at the Contractor's expense If Contractor does not pay costs of such removal and storage within 10 days after written notice Wasatch Regional Landfill Inc may upon an additional 10 days written notice sell such materials and equipment at auction or at private sale and shall account for the proceeds thereof after deducting costs and damages that would have been borne by Contractor including compensation for the services of the Architect/Engineer or subconsultants and expenses made necessary thereby If such proceeds of the sale do not cover costs which Contractor should have borne the Contract Price shall be reduced by the deficiency or Contractor shall pay the difference to Wasatch Regional Landfill Inc

12 2 5 Contractor shall bear the cost of correcting work originally installed by Wasatch Regional Landfill Inc or by separate contractors and damaged by the Contractor's correction or removal of Contractor's work Article 6 describes coordination between the Contractor Wasatch Regional Landfill Inc and separate contractors

12 3 *ACCEPTANCE OF NONCONFORMING WORK*

12 3 1 If Wasatch Regional Landfill Inc prefers to accept Work which is not in accordance with the requirements of the Contract Documents the Wasatch Regional Landfill Inc Project Manager may do so instead of requiring its removal and correction in which case the Contract Price will be reduced as appropriate and equitable Such adjustment shall be effected whether or not final payment has been made

ARTICLE 13 MISCELLANEOUS PROVISIONS

13 1 *GOVERNING LAW*

13 1 1 The Contract shall be governed by the law of the State of the place of the project and the charter and ordinances of the City of the place of the project, where applicable Venue for any cause of action shall be in Harris County in the State of Texas

13 2 *SUCCESSORS AND ASSIGNS*

13 2 1 Wasatch Regional Landfill Inc and Contractor respectively bind themselves their partners successors, assigns and legal representatives to the other party hereto and to partners successors, assigns and legal representatives of such other party in respect to covenants agreements and obligations contained in the Contract Documents Neither party to the Contract shall assign the Contract in whole or in part without the prior written consent of the other If either party attempts to make such an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the contract

13 3 *WRITTEN NOTICE*

13 3 1 Written notice shall be deemed to have been duly served if delivered in person to the Wasatch Regional Landfill Inc Project Manager or Contractor at the address given in the Agreement, or if sent by registered or certified mail to the last business address known to the party giving notice

13 4 *RIGHTS AND REMEDIES*

13 4 1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties obligations, rights and remedies otherwise imposed or available by law

13 4 2 No act or failure to act by Wasatch Regional Landfill Inc Architect/Engineer or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such act or failure to act constitute approval of or acquiescence in a breach thereunder except as may be specifically agreed in writing

13 5 *TESTS AND INSPECTIONS*

13 5 1 Contractor shall give Wasatch Regional Landfill Inc and Architect/Engineer timely notice of the time and place where tests and inspections are to be made and shall cooperate with inspection and testing personnel to facilitate required inspections or tests

13 5 2 Wasatch Regional Landfill Inc will employ and pay for the services of an independent testing laboratoty to perform inspections or tests required by the Contract Documents except

1 Inspections or tests covered by Paragraph 13 5 3
2 Costs incurred in connection with tests or inspections conducted pursuant to Paragraph 12 2 1 or
3 Inspections or tests otherwise specifically provided in the Contract Documents to be paid by Contractor

13 5 3 Contractor shall be responsible for and shall pay all costs in connection with any inspection or testing required in connection with Wasatch Regional Landfill Inc acceptance of a supplier of materials or equipment proposed to be incorporated in the Work, or of materials, mix designs or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work

13 5 4 Neither observations by Wasatch Regional Landfill Inc or Architect/Engineer nor inspections tests or approvals by others shall relieve Contractor from Contractor's obligations to perform the Work in accordance with Contract Documents

13 6 *INTEREST*

13 6 1 No interest will accme on late payments by Wasatch Regional Landfill Inc except as provided under Civil Statutes of the State of the place of the project

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

14 1 *TERMINATION BY WASATCH REGIONAL LANDFILL INC FOR CAUSE*

14 1 1 Wasatch Regional Landfill Inc may terminate the Contract if the Contractor

1 persistently or repeatedly refuses or fails to supply enough properly skilled workers or proper materials
2 persistently disregards laws ordinances or rules regulations or orders of a public authority having jurisdiction or
3 otherwise is guilty of material breach of a provision of the Contract Documents

14 1 2 When any of the above reasons exists the Wasatch Regional Landfill Inc Project Manager may without prejudice to any other rights or remedies of Wasatch Regional Landfill Inc and after giving Contractor and Surety seven days written notice terminate employment of Contractor and may subject to any prior rights of the Surety

1 request that Surety complete the Work or
2 take possession of the site and of all materials equipment, tools and construction equipment and machinery thereon owned by Contractor and
3 finish the Work by whatever reasonable method the Wasatch Regional Landfill Inc Project Manager may deem expedient

14 1 3 After receipt of a notice of termination and except as otherwise directed by the Wasatch Regional Landfill Inc Project Manager Contractor shall

1 Stop Work under the Agreement on the date and to the extent specified in the notice of termination
2 Place no further orders or subcontracts for materials services or facilities except as necessary to complete the portion of the Work (if any) under the Agreement which is not terminated
3 Terminate all orders and subcontracts to the extent that they relate to the performance of Work under the Agreement which is terminated
4 Assign to Wasatch Regional Landfill Inc Project Manager in the manner at the times and to the extent directed by the Wasatch Regional Landfill Inc Project Manager all of the right, title and interest of Contractor under the orders and subcontracts so terminated Wasatch Regional Landfill Inc shall have the right, in its discretion to settle or pay any or all claims arising out of the termination of such orders and subcontracts
5 Settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts with the approval of the Wasatch Regional Landfill Inc Project Manager
6 Take such action as may be necessary or as the Wasatch Regional Landfill Inc Project Manager may direct, for the protection and preservation of the property related to this Agreement which is in the possession of Contractor and in which Wasatch Regional Landfill Inc has or may acquire an interest,
7 Secure the Project in a safe state before leaving the site providing any necessary safety measures shoring, or other devices

14 1 4 When Wasatch Regional Landfill Inc terminates the Contract for one of the reasons stated in Subparagraph 14 1 1 Contractor shall not be entitled to receive further payment until the Work is complete subject to the provisions of Paragraph 14 1 5

14 1 5 If the unpaid balance of the Contract Price exceeds the costs of finishing the Work, including liquidated damages and other amounts due under this Contract, such balance shall be paid to Contractor If such costs exceed the unpaid balance Contractor shall pay the difference to Wasatch Regional Landfill Inc The amount to be paid to Contractor or Wasatch Regional Landfill Inc as the case may be shall be certified by the Wasatch Regional Landfill Inc Project Manager upon application and this obligation for payment shall survive termination of the Contract

14 2 *TERMINATION BY WASATCH REGIONAL LANDFILL INC FOR CONVENIENCE*

14 2 1 Wasatch Regional Landfill Inc may without cause and without prejudice to any other rights or remedies of Wasatch Regional Landfill Inc terminate employment of Contractor in whole or part by giving Contractor and Surety seven days written notice

14 2 2 After receipt of a notice of termination and except as otherwise directed by the Wasatch Regional Landfill Inc Project Manager Contractor shall conform to the requirements of Paragraph 14 1 3

14 2 3 After receipt of a notice of termination Contractor shall submit to Wasatch Regional Landfill Inc its termination claim Such claim shall be submitted to Wasatch Regional Landfill Inc promptly but in no event later than six months from the effective date of termination unless one or more extensions in writing are granted by the Wasatch Regional Landfill Inc Project Manager If Contractor fails to submit its termination claim within the time allowed, Wasatch Regional Landfill Inc Project Manager shall determine on the basis of available information the amount, if any due to Contractor because of the termination Wasatch Regional Landfill Inc shall then pay to Contractor the amount so determined

14 2 4 If Wasatch Regional Landfill Inc and Contractor fail to agree on the amount to be paid Contractor because of the termination of the Agreement or part thereof Wasatch Regional Landfill Inc Project Manager will determine on the basis of information available to Wasatch Regional Landfill Inc Project Manager the amount due (if any) to Contractor by reason of the termination as follows

1 The Contract Price for all Work performed in accordance with Contract Documents up to the date of termination determined in the manner prescribed for monthly payments in Article 9 except no retainage shall be withheld by Wasatch Regional Landfill Inc either for payment determined by percentage of completion or for materials and equipment delivered to the site in storage or in transit

2 Reasonable termination expenses including the costs for settling and paying claims arising out of termination of work under subcontracts and purchase orders the reasonable cost of preservation and protection of Wasatch Regional Landfill Inc property after termination (if required) and the cost of Claim preparation Termination expenses do not include field or central office overhead, salaries of employees of Contractor or litigation costs including attorney fees

No amount will be allowed for anticipated profit or central office overhead on the uncompleted Work, or any cost or lost profit for any other business of Contractor alleged to be damaged by the termination

14 2 5 Contractor shall promptly remove from the site construction equipment, tools and temporary facilities except such temporary facilities which Wasatch Regional Landfill Inc Project Manager may wish to purchase and retain

14 2 6 Contractor shall cooperate with Wasatch Regional Landfill Inc Project Manager during the transition period

14 2 7 Wasatch Regional Landfill Inc will take possession of the Work and materials delivered to the site in storage or in transit as of the date or dates specified in the termination notice and will be responsible for maintenance utilities security and insurance as stated in the notice of termination

14 3 *SUSPENSION BY WASATCH REGIONAL LANDFILL INC FOR CONVENIENCE*

14 3 1 The Wasatch Regional Landfill Inc Project Manager may without cause after giving Contractor and the Contractor's Surety notice order Contractor in writing to suspend delay or interrupt the Work in whole or in part for such period of time as the Wasatch Regional Landfill Inc Project Manager may determine

14 3 2 An adjustment shall be made in the Contract Time equivalent to the length of time of the suspension

14 3 3 An adjustment shall be made for the increases in the cost of performance of the Contract, including profit on the increased cost of performance caused by suspension delay or interruption in accordance with Paragraph 7 4 No adjustment shall be made to the extent

1 that performance is was or would have been so suspended delayed or interrupted by another cause for which Contractor is responsible or

2 that an adjustment is made or denied under another provision of the Contract

14 4 *TERMINATION BY CONTRACTOR*

14 4 1 Contractor may terminate the Contract if the Work is stopped for a period of 30 days through no act or fault of Contractor Subcontractor or their agents or employees or any other persons performing portions of the Work under contract with Contractor for any of the following reasons

1 issuance of an order of a court or other public authority having jurisdiction
2 an act of government, such as a declaration of national emergency making material unavailable
3 if repeated suspensions delays or interruptions by Wasatch Regional Landfill Inc as described in Paragraph 14 3 constitute in the aggregate more than 100 percent of the total number of days scheduled for completion or 120 days in any 365 day period whichever is less

14 4 2 If the Agreement is terminated pursuant to this provision Contractor shall file a Claim for termination expenses in accordance with the requirements of Paragraph 14 2

END OF DOCUMENT

Document 00800

SUPPLEMENTARY CONDITIONS

The following supplements modify Document 00700 - General Conditions Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions the unaltered portions of the General Conditions shall remain in effect

ARTICLE 7 - CHANGES IN THE WORK Insert the following paragraphs

7 4 2 2 ALLOWABLE OVERHEAD AND PROFIT FOR CHANGE ORDERS

6 The allowable overhead and profit for increase in Contract Price for costs attributable to changes shall be

	Overhead	Profit
To Contractor on work by other forces	10 percent	0 percent
To First tier Subcontractor on work by his Sub-subcontractors	10 percent	0 percent
Work by Contractor and subcontractors for work by their respective forces	10 percent	5 percent

A maximum of the four listed percentages not to exceed the percentages shown is allowed regardless of the number of tier subcontractors On changes of both increases and decreases of the cost of work the overhead and profit percentages shall apply on the net increase in direct costs of Contractor or Subcontractor However where work of the Contractor or first tier Subcontractor includes both additive and deductive amounts from separate lower tier subcontractors the percentages will be allowed on the added amounts prior to subtraction of the credit amounts

ARTICLE 9 - PAYMENTS AND COMPLETION Insert the following paragraphs

9 7 2 2 As a record of payment to Subcontractors and Suppliers the Contractor shall prepare and transmit with each payment a release form providing the name of the Payee and the amount paid This release form shall include a provision for the Subcontractor or Supplier to sign and date the form upon receipt of payment On the form instruct the Payee to return the form immediately to the Contractor The dated and signed forms shall be attached to the Contractor's estimate for payment or application for payment covering the next billing period

9 11 2 The amount of penalty for delay provided in General Conditions Paragraph 9 11 payable by Contractor or Contractor's Surety for each and every calendar day of delay beyond the Contract Time until the Work is accepted by Wasatch Regional Landfill Inc as substantially complete shall be $1 000 00 per day

END OF DOCUMENT

TECHNICAL SPECIFICATIONS

DIVISION 1

GENERAL REQUIREMENTS

TABLE OF CONTENTS

END OF DOCUMENT

SECTION 01010

SUMMARY OF WORK

PART 1 GENERAL

1 1 SUMMARY

A This section supplements the requirements specified in the General Conditions and Supplementary Conditions If the requirements of this section and conditions noted above conflict the Contractor shall adhere to the more stringent requirement as determined by the Owner

B Section Includes

1 Contract Description

2 Construction water

3 CONTRACTOR use of site

4 Description of work

5 CONTRACTOR s Work Scope

1 2 CONTRACT DESCRIPTION

A Contract Type Stipulated price as described in the Standard Form of Agreement between Owner and Contractor on the Basis of a Stipulated Price

1 3 CONSTRUCTION WATER

A Construction water is available on-site Construction water to be obtained from a lined pond located northeast of the existing landfill or from on site well (~800 gpm)

B The CONTRACTOR shall be responsible for transporting and/or conveying all required construction water from the available source

1 4 CONTRACTOR S USE OF SITE

A The CONTRACTOR cannot interfere with ongoing landfill operations, including the allowance of sufficient water supply for dust control and operational measures

B The CONTRACTOR should limit activities to the project area as shown on the Drawings stockpiles staging area and haul road as identified by the OWNER

1 5 DESCRIPTION OF WORK

A The work to be performed for this contract includes but is not necessarily limited to the construction of the Liquid Waste Pond Liquid Waste Pond is approximately 2 1 acres

B The Liquid Waste Pond base liner system from bottom to top consists of the following constructed layers

- Excavated and prepared subgrade
- Geocomposite Vent Strips
- 60-mil textured (both sides) HDPE geomembrane liner
- 60-mil textured (both sides) HDPE geomembrane liner

C Other Construction Items Include

- 4 thick road base for northwest access road
- Leak detection pipe gravel and geotextile wrap
- Liner terminations and anchor trenches
- Placement and compaction of engineered fill to create subgrade

All work must be carried out and maintained per the Drawings and Specifications subject to the approval of the Design Engineer and Construction Quality Assurance consultant

1 6 CONTRACTOR S WORK SCOPE

A CONTRACTOR shall furnish all labor materials tools equipment supervision transportation and installation services required for the following tasks as summarized below and outlined in the Drawings and Specifications

1 Excavating and stockpiling soils within the project area to the lines and grades shown on the Drawings Stockpile locations to be determined by the OWNER

2 Placement and compaction of engineered fill material to the lines and grades shown on the Drawings within the Pond area

3 Preparing geosynthetic anchor trench including locating excavating fill placement backfilling and compaction and the installation of markers

4 Provide all necessary construction staking to lay-out the work and other surveying to compute quantities and prepare as-built drawings for top of subgrade Prepare all required Record Drawings and surveys necessary to document as-built quantities/conditions Submit all required Record Drawings to OWNER Record (as-built) drawings shall be signed and sealed by a Utah Registered Land Surveyor

5 Supply and installation of leak detection pipe and gravel, and installation of geotextile wrap –geotextile supplied by owner

6 Supply and installation of 60-mil HDPE geomembrane – by others

7 Supply and installation of geocomposite – by others

8 Place engineered fill to create grade

9 Construction of 4 thick road base section perimeter access road including supplying hauling, spreading and grading

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01019

CONTRACT CONSIDERATIONS

PART 1 GENERAL

1 1 SECTION INCLUDES

A References and abbreviations of various industry associations trade associations societies organizations and regulatory agencies as referenced in the Contract Documents

1 2 DESCRIPTIONS

A The Contract Documents contain references to various standard Specifications codes practices and requirements for materials workmanship installation inspections and tests Which references are published and issued by the organizations societies and associations listed below by abbreviation and name Such references are hereby made a part of the Contract Documents to the extent cited

B Any material method or procedure specified by reference to the number symbol or title of a specific Specification or standard such as a Commercial Standard American National Standard Federal or State Specification Industry or Government Code a trade association code or standard or other similar standard shall comply with the requirements of the edition in effect on the date of Notice to Proceed

C The code specification or standard referred to except as modified in these Specifications shall have full force and effect as though printed in these Specifications These Specifications and standards are not furnished to bidders since manufacturers and trades involved are assumed to be familiar with their requirements The OWNER will furnish upon request information as to how copies of the Specifications and standards referred to may be obtained

1 3 ABBREVIATIONS

A Whenever in the Contract the following abbreviations are used their meanings shall be as follows

AASHTO American Association of State Highway and Transportation Officials

ACI American Concrete Institute

ANSI American National Standards Institute

ASCE American Society of Civil Engineers

ASTM American Society for Testing and Materials

AWWA American Water Works Association

GRI Geosynthetics Research Institute

FS Federal Specifications

NSF National Sanitation Foundation

OSHA Occupational Safety and Health Administration

PPI Plastic Pipe Institute

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1 1 SECTION INCLUDES

A Measurement and payment methods for contract bid items

1 2 MEASUREMENT OF QUANTITIES

A Performed according to United States Measures

B Based on actual units installed or neat line dimensions of work completed

1 3 CALCULATION OF QUANTITIES

A Progress Payment Quantities

1 CONTRACTOR will compute all quantities of Work performed or of materials and equipment delivered to the site for progress payment purposes

2 OWNER may at any time verify quantities calculated by CONTRACTOR

B Final Payment Quantities CONTRACTOR will compute all quantities of Work performed or of materials and equipment delivered and installed for final payment purposes OWNER may perform an independent computation of all quantities of work performed and of materials and equipment installed

1 4 PAYMENT

A In accordance with lump sum unit prices or force account rates shown on the CONTRACTOR S final negotiated Bid Schedule

B Includes all costs for overhead and profit and for supplying materials labor equipment and tools and all applicable Federal State County City and local taxes necessary to complete the Work in accordance with the Specifications Drawings and Contract Conditions

1 5 VALUES OF UNIT PRICES

A The number of units and quantities contained in the Bid Schedule are approximate only and final payment will be made for the actual number of units and quantities incorporated in the work or made necessary to complete the project All unit and lump prices shall include applicable Federal State County City and local taxes

B In the event that work and materials or equipment are required to be furnished to a greater or lesser extent than is indicated by the Contract Documents such work and materials or equipment shall be furnished in greater or lesser quantities

1 6 CHANGES AND EXTRA WORK

A Changes and extra work will be measured and paid for in accordance with the requirements of this Section

1 7 REJECTED MATERIALS

A Quantities of material wasted or disposed in a manner not called for in the Specifications rejected loads of material including material rejected after it has been placed by reasons of the failure of CONTRACTOR to conform to the provisions of the Specifications material not unloaded from the transporting vehicle material placed outside the limits indicated by the Drawings or established by OWNER or material remaining on hand after completion of the Work, will not be paid for and such quantities will not be included in the final total quantities No compensation will be made for loading hauling and disposing of rejected material

1 8 FORCE ACCOUNT WORK

A Payment for Force Account work will be determined as follows

B Labor

1 Payment for labor will be based on the Force Account Labor Rate Schedule submitted with the bid

2 Payment constitutes full compensation for labor including wages benefits overhead and profit for each individual

C Equipment

1 Payment for equipment will be based on the Force Account Equipment Rate Schedule submitted with the bid

2 Payment constitutes full compensation for supplying equipment and includes all costs for maintenance fuel insurance overhead profit and any other costs necessary to provide and operate the equipment Payment does not include operator labor cost

D Materials

1 Payment for materials will be paid for at CONTRACTOR s invoiced cost plus 10 percent

2 Payment will be based on invoices from suppliers documenting cost to CONTRACTOR

3 Where invoices are not available a unit cost must be approved by the OWNER prior to use of the material

1 9 PAY ITEMS

A Phase Expansion

MINING - 3RD PARTY EARTHWORK

1 Mobilization/Demobilization (Bid Item 1)

a Measurement by Lump Sum (LS) based on mobilization of equipment and labor to perform work and demobilizing from and cleaning the site after all work and testing has been performed and accepted by the OWNER

b Payment as follows 50 percent of lump sum amount upon completion of 10 percent of the work, and 50 percent for demobilization and site cleanup Payment includes all costs for mobilizing and demobilizing equipment living expenses bonds all required permits insurance office and field overhead geosynthetic installer management development of work plans submittals and any other administrative costs necessary to complete the work Includes work described in Sections 01200 01300 01310 01400 01500 01560 01600 01630, and 01700 as well as management related to Sections 02771 02776 02778 and 02779

2 Excavation/Stockpiling (Bid Item 2)

a Measured by the bank Cubic Yard (CY) Measurement of excavation will be made by companng pre-construction topography of the pond construction area as depicted on the Drawings with post-excavation topography Pre-construction topography will be established by field survey of existing grades Survey will establish existing grades at a maximum 50-foot gnd and establish major grade breaks Post-construction topography will be established by similar survey at a maximum 50-foot gnd and also establish major grade breaks Calculations will be made on an average end area basis vertically by 2-foot contour interval

b Payment includes all costs to excavate soil within the pond construction area load haul and place in a stockpile as described in Sections 02221 and 02222 and as shown on the Drawings Excavation of matenal for use as engineered fill is paid for in item 10

3 Liner Subgrade Preparation (Bid Item 3)

a Measured by the acre (AC) Measurement based on penmeter survey sloped areas will be equated based on actual area not plan area

b Payment includes all costs to complete subgrade preparation for the landfill as described in Section 02223

4 Liner Termination (Bid Item 4)

a Measurement by the Lineal Foot (LF) of the termination based on the field survey

b Payment shall be by Lineal Foot (LF) Payment includes all costs to locate excavate prepare shape backfill compact or otherwise construct the termination as shown on the Drawings and described in Section 02222

MINING MISCELLANEOUS

5 Surveying and As-built Drawings **(Bid Item 8)**

a Measured by Lump Sum (LS)

b Payment includes all costs to perform construction control and slope staking surveys to complete quantities surveys to document as-built conditions of the Pond and the preparation of Record Drawings as described in Section 01050 and 01052 CONTRACTOR shall provide an estimate of labor hours and expenses with this bid to support the lump sum price

6 NPDES **(Bid Item 9)**

a Measured by Lump Sum (LS)

b Payment includes all costs to prepare and submit the Construction Notice of Intent and to prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the requirements of Section 01560

GEOSYNTHETICS

7 60-mil Geomembrane Liner (textured both sides) **(Bid Item 7, Owner Supplied)**

(Installed by Others)

a Measurement by area installed including material in the anchor trenches in accordance with agreement between OWNER and SUPPLIER/INSTALLER measured by the square foot (SF) based on a perimeter survey of the completed installation No adjustment will be made for uneven contours or for overlap at seams or wastage No measurement will be made for geomembrane lost due to damage resulting from either the fault or the negligence of the CONTRACTOR The perimeter is defined as the neat line dimension shown on the perimeter details

b Payment will be by the Square Foot (SF) Includes all costs to install geomembrane as shown on the Drawings and described in Section 02778

8 Geocomposite **(Bid Item 8, Owner Supplied)**

(Installed by Others)

a Measurement by area installed in accordance with agreement between OWNER and SUPPLIER/INSTALLER measured by the square foot (SF) based on a perimeter survey of the completed installation No

adjustment will be made for uneven contours or for overlap at seams or wastage No measurement will be made for geocomposite lost due to damage resulting from either the fault or the negligence of the CONTRACTOR The perimeter is defined as the neat line dimension shown on the perimeter details

b Payment will be by the Square Foot (SF) Includes all costs to install geocomposite as shown on the Drawings and described in Section 02776

9 Geotextile (Bid Item 9, Owner Supplied)

a Measurement by the Square Foot (SF) Measurement based on the neat line design dimensions in accordance with agreement between OWNER and SUPPLIER

b Payment will be by the Square Foot (SF) Includes all costs to furnish geotextile as shown on the Drawings and described in Section 02771 Payment specifically excludes installation

CELL SPECIFIC 3RD PARTY EARTHWORK

10 Placement and Compaction of Engineered Fill (Bid Item 10)

a Measured by in-place Cubic Yard (CY) Measurement of in-place engineered fill will be made by comparing pre-construction topography with post-construction topography Pre-construction topography will be established by field survey of existing grades Survey will establish existing grades at a maximum 50-foot grid and establish major grade breaks Post-construction topography will be established by similar survey at a maximum 50-foot grid and also establish major grade breaks Calculations will be made on an average end area basis vertically by 2-foot contour interval

b Payment will be made by the Cubic Yard (CY) Payment includes all costs to excavate from the Pond area or the OWNER designated borrow area haul place rough grade moisture condition and compact as described in Sections 02221 and 02222 and as shown on the Drawings

11 Leak Detection Sump (Bid Item 18)

a Measurement by Lump Sum

b Payment shall be by Lump Sum (LS) Payment includes all costs to purchase supply and install the leak detection pipe and gravel backfill and install OWNER supplied geotextile as shown on the Drawings and described in Section 02231

19 4 Thick Untreated Base Course Supply (Bid Item 19)

a Measured by in-place Cubic Yard (CY) Measurement and calculation of in-place road base will be made by surveying the limits of the roads and ramps and multiplying the area times the neat line design thickness shown on the Drawings

b Payment will be made by the Cubic Yard (CY) Payment includes all costs to purchase and supply base rock as described in Sections 02231 and as shown on the Drawings

20 4 Thick Untreated Base Course Placement (Bid Item 20)

a Measured by in-place Cubic Yard (CY) Measurement and calculation of in-place road base will be made by surveying the limits of the roads and ramps and multiplying the area times the neat line design thickness shown on the Drawings

b Payment will be made by the Cubic Yard (CY) Payment includes all costs to place moisture condition and compact as described in Sections 02231 and as shown on the Drawings

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01035

MODIFICATION PROCEDURES

PART 1 GENERAL

1 1 SECTION INCLUDES

A Field Orders

B Work Directive Changes

C Change Orders

1 2 CHANGE PROCEDURES

A OWNER will issue Field Orders for minor changes in the Work not involving an adjustment to Contract Price or Contract Time

B OWNER may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid CONTRACTOR shall prepare and submit a Proposal with estimate within 5 days

C CONTRACTOR may request a change by submitting a Proposal to OWNER describing the proposed change and its full effect on the Work Include a statement describing the reason for the change the effect on the Contract Price and Contract Time and a statement describing the effect on Work by separate or other contractors in accordance with Section 00675 within the Project Manual

D OWNER may issue a Work Change Directive for any change which if not processed expeditiously might delay the Project This is not a Change Order but only a directive to proceed with Work that may be included in a subsequent Change Order

E Changes affecting Contract Price or Contract Time resulting under paragraphs 1 2 B C and D of this Section will be processed as a Change Order

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01050

FIELD ENGINEERING

PART 1 GENERAL

1 1 SECTION INCLUDES

A General requirements for survey work to be performed by CONTRACTOR to layout Work under this Contract

B Before commencing any surveys CONTRACTOR will give OWNER two working days advance notice so that OWNER may witness such work

1 2 RELATED SECTIONS

A Section 01025 – Measurement and Payment

1 3 DESCRIPTION

A Reference points Reference points to be provided by OWNER pursuant to the General Conditions will include referenced monuments and elevation benchmarks in the vicinity of the Project If displaced by CONTRACTOR replacement of these reference points will be at the expense of CONTRACTOR

B CONTRACTOR will furnish all necessary detail surveys including all lines grades and elevation appropriate to control construction At a minimum construction surveys are required for top of subgrade

C Use by OWNER OWNER may at any time use line and grade points and markers established by CONTRACTOR CONTRACTOR s surveys are a part of the Work and may be checked by OWNER at any time CONTRACTOR is responsible for any lines grades or measurements which do not comply with specified or proper tolerances or which are otherwise defective and for any resultant defects in the Work CONTRACTOR will be required to conduct re-surveys or check surveys to correct errors indicated by review of the field notebooks or otherwise detected

1 4 SURVEYS FOR MEASUREMENT FOR PAYMENT

A When the Specifications or OWNER require Bid Schedule items of work to be measured by surveying methods CONTRACTOR will perform the surveys All such surveys including control surveys for establishing the measurement reference lines will be performed by a duly qualified and licensed surveyor in the presence of CONTRACTOR who will provide notice so OWNER may witness the surveying operation OWNER may independently check calculations of final quantities for payment purposes A duplicate of the note reductions and calculations will be given to OWNER All calculated quantities shall be certified by surveyor as to accuracy

1 5 SURVEYING ACCURACY AND TOLERANCES IN SETTING OF SURVEY STAKES

A Perform control traverse field surveys and computations to an accuracy of at least 1 10 000

B The tolerances applicable in setting survey stakes are as set forth below Such tolerances cannot supersede stricter tolerances required by the Drawings or Specifications and cannot otherwise relieve the **CONTRACTOR** of responsibility for measurements in compliance therewith

Type of Mark	Horizontal Position	Elevation
Permanent reference points	1 in 10 000	± 01 ft
General excavation and earthwork	1 in 2 000	± 10 ft

C Tolerances for the thickness of earthen layers shown on Drawings and for elevations shown on the Drawings are ±0 10 foot unless otherwise specified

D Surveyor must be licensed in the State of Utah

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END **OF** SECTION

SECTION 01052

LAYOUT OF WORK AND SURVEYS

PART 1 GENERAL

1 1 SUMMARY

A Section includes requirements for survey work to be provided by the CONTRACTOR for the following

1 Setting offset stakes slope stakes and grade stakes for field layout of features for performance of the Work

2 Surveys for measurement of quantities for payment

3 Record Drawings

1 2 DESCRIPTION

A Reference Points The reference points provided by the OWNER include monuments and elevation bench marks in the vicinity of the Project If displaced during the project replacement of these reference points will be at the expense of the CONTRACTOR

B The OWNER reserves the right to perform any desired checking and correction of the CONTRACTOR s layout work relative to OWNER's surveys but this does not relieve the CONTRACTOR of the responsibility for adequate performance of their Work

C Equipment and Personnel Provide instruments and other survey equipment that are accurate suitable for the surveys required in accordance with recognized professional standards and in proper condition and adjustment at all times Perform surveys under the direct supervision of a licensed surveyor

D Field Notes and Records Record surveys in field notebooks

E Use by the OWNER The OWNER may at any time use line and grade points and markers established by the OWNER or CONTRACTOR The CONTRACTOR s surveys are a part of the Work and may be checked by the OWNER or representatives of the OWNER at any time

1 3 RELATED SECTIONS

A Section 01025 - Measurement and Payment

B Section 01050 – Field Engineering

1 4 SURVEYS FOR LAYOUT AND PERFORMANCE OF WORK

A CONTRACTOR will perform all surveys for layout of the Work reduce the field notes make necessary calculations and prepare drawings necessary to carry out such work CONTRACTOR s layout work will include the following

1 Slope staking for cell grading at 50-foot grid and grade breaks

2 Blue top for subgrade at 50-foot gnd and grade breaks

3 All as-built surveys specified here in

4 Surveys to measure completed units of work specified here in

B CONTRACTOR must perform all additional slope staking off-setting and other control staking necessary to perform the Work

1 5 SURVEYS FOR RECORD DRAWINGS AND MEASUREMENT FOR PAYMENT

A Provide the OWNER with as-built Record Drawings that show the following items

1 Topography that depicts the subgrade following excavation and engineered fills

2 Anchor trench location with survey points every 200 feet and at alignment breaks such as corners

3 Limit of geomembrane liner (surface area)

4 Topography that depicts the top of the Subgrade including penmeter berms signed and sealed by a Utah Registered Land Surveyor

5 Alignment ends and invert elevations of pipes and culverts

B Submit survey information for items listed above to the OWNER before the items are covered

1 Provide surveys to measure the following items

a Actual area (corrected for slope) of geosynthetics

b Length of pipes and culverts

c Volume of excavation and engineered fill

C The OWNER may perform independent checks

D Provide Record Drawings on 22 ' x 34 size drawings and on computer disk in AutoCAD version 2000 or later Use the coordinate system shown on the drawings

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 GENERAL

1 1 REQUIREMENTS INCLUDED

A Representatives of CONTRACTOR subcontractors and suppliers attending meetings must be authonzed to act on behalf of organizations they represent

1 2 PRE-CONSTRUCTION MEETING

A Meeting will be held at a location selected by OWNER

B Attendance

1 CONTRACTOR s Office Representative

2 CONTRACTOR's On-Site Field Superintendent

3 Any Subcontractors or Supplier's representatives whom CONTRACTOR may desire to invite or OWNER may request

4 ENGINEER's Representatives

5 OWNER's Representatives (Includes Design Engineer and CQA Personnel)

C A suggested format would include but not be limited to the following subjects

1 Presentation of a proposed construction progress schedule and submittals as required by the Contract Documents

2 Required bonds and insurance certifications pnor to Notice to Proceed

3 Liquidated Damages

4 Procedures for handling submittals

5 Direction of correspondence and coordinating responsibility between CONTRACTOR and OWNER

6 Request or scheduling of a weekly job meeting for all involved

7 Laboratory testing of construction matenals

8 Applications for payment and progress payment procedures

9 Change Order procedures

10 OWNER's site regulations

D The meeting will be documented by the OWNER or person designated by the OWNER Copies of the minutes and relevant documents will be provided to all parties

1 3 WEEKLY PROGRESS MEETINGS

A OWNER S Representative will schedule and administer progress meetings at a minimum of once per week and such additional meetings as required or as requested by OWNER

B Attendance

1 OWNER S Representative

2 ENGINEER if requested by OWNER S Representative

3 CQA Officer

4 CONTRACTOR s supenntendent

5 Subcontractors as appropriate to agenda

6 Suppliers as appropriate to agenda

C Meeting requirements

1 OWNER S Representative will administer the following general requirements for progress meetings

a Prepare agenda for meetings

b Make physical arrangements for meetings

c Preside at meetings

2 CONTRACTOR will administer the following general requirements for progress meetings

a Record significant proceedings and decisions of meeting

b Reproduce and distnbute copies of meeting record within seven days after each meeting to participants in meeting and to parties affected by decisions made at meeting Furnish one copy of minutes to participants Revise and distnbute revisions to meeting minutes as necessary

D Suggested Agenda

1 Review and approval of record of previous meeting

2 Review of Work progress since previous meeting

3 Field observations problems and conflicts

4 Problems which impede Work Schedule

5 Review of off-site delivery schedules

6 Corrective measures and procedures to regain projected schedule if a review of the schedule deems it necessary

7 Revisions to Construction Progress Schedule

8 Coordination of schedules between contractors

9 Review submittal schedules expedite as required

10 Maintenance of quality and safety standards

11 Pending changes and substitutions

12 Review proposed changes for effect on construction schedule and completion date and on other contracts of projects

13 Review of drawings and specifications that govern the next two weeks of work

14 Review of bid item quantities relative to original estimates

15 Review and update of as-built drawings

16 Other business

1 4 DAILY PROGRESS MEETINGS

A An informal progress meeting will be held daily before the start of work At a minimum this meeting will be attended by the OWNER S Representative and CONTRACTOR s Project Manager or Job Foreman The purpose of this meeting is to

1 Review scheduled work activities

2 Discuss problems and resolutions

3 Review test data

4 Discuss the CONTRACTOR s personnel and equipment assignments for the day

5 Review the previous day s activities and accomplishments

B This meeting will be documented by the OWNER S Representative

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1 1 SECTION INCLUDES

A Submittal procedures

B Construction progress schedules

C Proposed Products list

D Shop Drawings

E Product Data

F Samples

G Manufacturers installation instructions

H Manufacturers certificates

1 2 RELATED SECTIONS

A Section 01310 - Construction Schedule

B Section 01400 - Quality Control Manufacturers' field services and reports

C Section 01700 – Contract Closeout Contract warranties bonds manufacturers certificates and closeout submittals

1 3 SUBMITTAL PROCEDURES

A Transmit each submittal with a transmittal form Provide a minimum of three copies of each submittal OWNER will retain one copy of each submittal

B Sequentially number the transmittal form For revised submittals add an alphabetic suffix to the original number

C Identify Project CONTRACTOR Subcontractor or supplier pertinent drawing and detail number and specification section number as appropriate

D Apply CONTRACTOR s stamp signed or initialed certifying review verification of Products required field dimensions adjacent construction Work and coordination of information is in accordance with the requirements of the Work and Contract Documents

E Schedule submittals to expedite review by the OWNER and delivery in the time frame specified Coordinate submission of related items

F Allow 7 calendar days review time for each submittal excluding delivery time to and from the CONTRACTOR

G Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work

H Provide space for CONTRACTOR, OWNER and/or OWNER's Representative review stamps

I If revisions and re-submittals are required identify all changes made since previous submission

J Distribute copies of reviewed submittals as appropriate Instruct parties to promptly report any inability to comply with provisions

K Submittals not requested will not be recognized or processed

1 4 CONSTRUCTION PROGRESS SCHEDULES

A Submit initial schedule in duplicate within 5 days after date of Agreement

B Revise and resubmit as required but no less than every 7 days The revised schedule must show the original target schedule

C Submit revised schedules during weekly progress meetings If revisions to the schedule affect work by others (i e Liner Installer) the OWNER must be notified two weeks prior to the change No changes may be initiated without the written approval of the OWNER

D Submit a computer-generated schedule with separate line for each item of Work or operation identifying first work day of each week

E Show complete sequence of construction by activity identifying Work of separate stages and other logically grouped activities Indicate the critical path start and finish float dates and duration

F Indicate estimated percentage of completion for each item of Work at each submission

G Indicate submittal dates and review periods required for shop drawings product data samples and product delivery dates including those furnished by OWNER

1 5 PROPOSED PRODUCTS LIST

A Within 5 days after date of OWNER-CONTRACTOR Agreement submit list of major products proposed for use with name of manufacturer trade name and model number of each product

B For products specified only by reference standards give manufacturer trade name model or catalog designation and reference standards

1 6 SHOP DRAWINGS

A Submit the number of opaque reproductions which CONTRACTOR requires plus 2 copies which will be retained by OWNER

B Shop Drawings Submit for review After review produce copies and distribute in accordance with the SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01700 – CONTRACT CLOSEOUT

1 7 PRODUCT DATA

A Submit the number of copies which the CONTRACTOR requires plus 2 copies which will be retained by the OWNER

B Mark each copy to identify applicable products models options and other data Supplement manufacturers' standard data to provide information unique to this Project

C After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section 01700 – CONTRACT CLOSEOUT

1 8 SAMPLES

A Submit a sample of the gravel fill and any other imported soil material that represents the specified products Coordinate sample submittals for interfacing work

B For the soil samples submit each sample in an air-tight sealed bucket and provide at least 50 pounds unless otherwise stated in the individual specification sections

C Include identification on each sample including source identification and full project information

D Submit the number of samples specified in individual specification sections The Owner may retain all or a portion of each sample as a record of the submittal

1 9 MANUFACTURER INSTALLATION INSTRUCTIONS

A When specified in individual specification sections submit three copies of printed instructions for delivery storage assembly installation start-up adjusting and finishing to the Owner

B Indicate special procedures perimeter conditions requiring special attention and special environmental criteria required for application or installation

1 10 MANUFACTURER CERTIFICATES

A When specified in individual specification sections submit manufacturer s certificates in specified quantities

B Indicate material or product conforms to or exceeds specified requirements Submit supporting data affidavits certifications and quality control testing

C Certificates must be specific to the material or product delivered to the site

END OF SECTION

SECTION 01310

CONSTRUCTION SCHEDULE

PART 1 GENERAL

1 1 DESCRIPTION

A Prepare and submit with Bid a preliminary construction schedule in compliance with Section 01300

B The CONTRACTOR shall provide a schedule demonstrating completion of all work items by project completion date listed in Document 00020 Invitation to Bid

C OWNER will review the preliminary construction schedule and incorporate it into their overall project schedule

1 2 DELAYS AND RECOVERY

A If at any time during Project CONTRACTOR fails to complete an activity by its latest scheduled completion date CONTRACTOR must submit within two working days a written statement as to how and when CONTRACTOR will reorganize work force to return to current construction schedule

B Whenever it becomes apparent from progress evaluation and updated schedule data that milestone completion dates and/or contract completion dates will not be met some or all of the following actions must be taken

1 Increase construction staffing m such quantities and crafts to substantially eliminate backlog of work

2 Increase number of working hours per shift shifts per work day work days per week or amount of construction equipment or combination of foregoing to substantially eliminate backlog of work

3 Reschedule work items to achieve concurrence of accomplishment

C Under no circumstances will addition of equipment or construction forces increasing working hours or any other method manner or procedure to return to current Construction Progress Schedule be considered justification for contract modification or treated as acceleration

1 3 PROJECT UPDATES

A Update schedule weekly or as requested by Owner

B Provide details for scheduled activities over the two weeks following the current day of the schedule Changes affecting work by others shall be addressed per Section 01300 1 4 C

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1 1 SECTION INCLUDES

A Acceptance or quality assurance testing by OWNER

B Quality control testing by CONTRACTOR

C Certificates of compliance

1 2 SOURCE OF MATERIALS

A CONTRACTOR must notify OWNER in writing of the sources from which it proposes to obtain material requiring approval certification or testing Such notification must be made as soon as possible after award of Contract but no later than 5 days after receipt of the Notice to Proceed

1 3 ACCEPTANCE TESTING OR QUALITY ASSURANCE TESTING

A Acceptance testing is the testing of materials prior to their use in the Work and also any testing deemed necessary by OWNER for acceptance of the completed Work OWNER will perform acceptance testing of materials and workmanship in accordance with the Contract Documents and reserves the right to perform additional testing at any time to determine conformance with the requirements of the Contract Documents

B Acceptance testing by OWNER is not to be considered as a replacement for control testing conducted by CONTRACTOR or a manufacturer producing materials for CONTRACTOR Acceptance testing will be at the expense of OWNER

1 4 QUALITY CONTROL TESTING

A Quality control testing is the testing of materials prior to their delivery from a manufacturer or during construction such as geomembrane liner seam testing and such other tests as are specified in the various sections of the Specifications to ensure compliance with the Contract Documents CONTRACTOR must assume full responsibility for control testing and give sufficient notice to OWNER to permit it to witness the tests Control testing is at the expense of CONTRACTOR and where specifically required performed by an independent testing firm

B Submit the name address and qualifications together with the scope of proposed services of the proposed testing firm(s) submit to OWNER for approval at least 5 days prior to the scheduled commencement of any work involving such testing

C Within five days after completion of testing performed by or for CONTRACTOR submit test results to OWNER Identify test reports with the information specified for samples in Section 01300 and additionally the name and address of the organization performing the test and the date of the tests

1 5 CERTIFICATES OF COMPLIANCE

A CONTRACTOR may use certificates of compliance for certain materials and products in lieu of the specified sampling and testing procedures Submit certificates required to demonstrate proof of materials compliance with specification requirements Submit certificates in duplicate with each lot of material delivered to the Work or prior to delivery as required by the Contract The lots so certified must be clearly identified by the certificate Certificates must be signed by an authorized representative of the producer or manufacturer and state that the material complies in all respects with the requirements of the Contract Documents In the case of multiple shipments each shipment must be accompanied or preceded by a Certificate of Compliance

B The Certificate of Compliance must be accompanied by a certified copy of tests results or state that such test results are on file with the producer or manufacturer and must be furnished to OWNER on request The certificate must give the information specified for samples in Section 01300 the name and address of the organization performing the tests the date of the tests and the quantity of material shipped

C Materials used on the basis of a Certificate of Compliance may be sampled and tested at any time The fact that material is used on the basis of a Certificate of Compliance does not relieve CONTRACTOR of responsibility for incorporating material in the Work which conforms to the requirements of the Contract Any such material not conforming to such requirements will be subject to rejection whether in place or not

D OWNER reserves the right to refuse to permit the use of certain materials on the basis of a Certificate of Compliance

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01500

CONSTRUCTION FACILITIES

PART 1 GENERAL

1 1 SECTION INCLUDES

A Construction facilities required for the construction of the permanent facilities specified under the Scope of Work of this Contract

B Construction facilities include furnishing of all equipment materials tools accessories incidentals labor and performing all work for the installation of equipment and for construction of facilities including their maintenance operation and removal if required at the completion of the Work under the Contract

1 2 RELATED SECTIONS

A Section 01560 – Temporary Controls

1 3 DEFINITION

A Construction facilities include but are not be limited to the following temporary offices utilities equipment materials facilities, areas and services

1 Field Office (Optional)

2 Parking Areas

3 Temporary Roads

4 Storage of Materials and Equipment

5 Construction Equipment

6 Temporary Sanitary Facilities

7 Temporary Electric Power

8 Temporary Water

9 First Aid Facilities

10 Security

1 4 REFERENCES

A Construct/install maintain and operate construction facilities in accordance with the applicable federal state and local laws rules and regulations

1 5 GENERAL REQUIREMENTS

A CONTRACTOR is responsible for furnishing installing constructing operating maintaining removing and disposing of the construction related facilities as specified in this Specification and as required by OWNER for the completion of the Work under the Contract

B Locate and maintain construction facilities in a clean safe and sanitary condition at all times until completion of the Contract

C The requirements specified herein are in addition to any requirements specified elsewhere in the Contract Documents Construction facilities must meet the requirements for all-weather service

D Minimize land disturbances related to the construction facilities to the greatest extent possible and restore land to the extent reasonable and practical to its original contours by grading to provide positive drainage and by seeding the area to match with existing vegetation or as specified elsewhere All debris or other disturbances resulting from the CONTRACTOR s actions shall be removed by the CONTRACTOR to the satisfaction of the OWNER

E Design and construct utilities to provide uninterrupted service

1 6 FIELD OFFICE

A CONTRACTOR may provide an office for his own staff

B The location of the office must be approved by OWNER

1 7 PARKING AREAS

A OWNER will provide parking area for maintenance and delivery vehicles the OWNER s ENGINEER s and CONTRACTOR s representatives and other authorized visitors

1 8 TEMPORARY ROADS

A General

1 Temporary roads are existing roads that are improved or new roads constructed by CONTRACTOR for convenience of CONTRACTOR in the performance of the Work under the Contract

2 Coordinate construction with OWNER

3 If applicable coordinate all road construction activities with local utilities fire and police departments

4 Keep erosion to a minimum and maintain suitable grade and radii of curves to facilitate ease of movement of vehicles and equipment

5 Furnish and install longitudinal and cross drainage facilities including but not limited to the ditches structures pipes and the like

6 Clean equipment so that mud or dirt is not earned onto public roads Clean any mud or dirt transported by equipment onto paved roads both on site and off site

1 9 STORAGE OF MATERIALS AND EQUIPMENT

A Make arrangements for storage areas for matenals and equipment Locations and configurations of such facilities are subject to the acceptance of OWNER

B Confine all operations including storage of matenals to approved area CONTRACTOR is liable for any and all damage caused dunng such use of property of the OWNER or others Store matenals in accordance with manufacturer's instructions when applicable

C Store construction matenals and equipment within boundanes of designated areas Storage of gasoline or similar fuels must conform to state and local regulations and be limited to the areas approved for this purpose by the OWNER

1 10 CONSTRUCTION EQUIPMENT

A Erect equip and maintain all construction equipment in accordance with all applicable statutes laws ordinances rules and regulations of OWNER or other authonty having junsdiction

B Provide and maintain scaffolding staging runways hoists barncades and similar equipment required for performance of the Contract Provide hoists or similar equipment with operators and signals as required

C Provide maintain and remove upon completion of the Work all temporary rigging scaffolding hoisting equipment debns boxes barncades around openings and excavations fences ladders and all other temporary work as required for all work hereunder unless otherwise directed by OWNER

D Construction equipment and temporary work must conform to all the requirements of state county local authorities OSHA and underwnters which pertain to operation safety and fire hazard Furnish and install all items necessary for conformity with such requirements whether or not called for under separate sections of these Specifications

1 11 TEMPORARY SANITARY FACILITIES

A Provide temporary sanitary facilities for use by all employees and persons engaged in the work including subcontractors their employees and authonzed visitors

B Sanitary facilities include enclosed chemical toilets and washing facilities These facilities must meet the requirements of local public health standards Open pit or trench latnnes are not permitted

C Locate sanitary facilities as approved by OWNER and maintain in a sanitary condition dunng the entire course of the work

1 12 TEMPORARY ELECTRIC POWER (Optional)

A Provide and maintain dunng the course and progress of the Work all electncal power and winng requirements to facilitate the work of all trades and services associated with the work Make arrangements with the applicable serving utility company or provide generators and pay all charges for providing and maintaining electncal service including

usage costs at the site unless otherwise approved by the OWNER Furnish all temporary wiring feeders and connections

B Routing of temporary conductors including welding leads must not create a safety hazard nor interfere with operation and maintenance of existing facilities

C Install all temporary wiring in accordance with the applicable requirements of the local electrical code

D Provide power and lighting to field office and for Work as required at no extra cost to OWNER

1 13 TEMPORARY WATER

A Potable water is not available on-site Refer to Section 01010 for construction water

B Make all arrangements for water needs from an off-site supplier for emergencies

1 14 FIRST AID FACILITIES

A Provide first aid equipment and supplies to serve all CONTRACTOR personnel at the site

1 15 SECURITY

A Make all necessary provisions and be responsible for the security of the Work and the site until final inspection and acceptance of the Work unless otherwise approved by the OWNER In no case shall the OWNER be responsible for the security of the CONTRACTOR s supplies property or equipment

1 16 SHUT-DOWN TIME OF SERVICES

A Do not disconnect or shut down any part of existing utilities and services except by express permission of OWNER

1 17 MAINTENANCE

A Maintain all construction facilities utilities temporary roads services to office and the like in good working condition as required by OWNER during the term of the Contract

1 18 STATUS AT COMPLETION

A Upon completion of the Work or prior thereto when so required by OWNER

1 Repair damage to roads caused by or resulting from the CONTRACTOR s work

2 Remove and dispose of all construction facilities including office trailers and other facilities and utilities including all concrete foundations Similarly return all areas utilized for temporary facilities to substantially their near original natural state or as otherwise indicated or directed

B Obliterate temporary roads built for CONTRACTOR s convenience and restore the area to near original conditions to the extent practicable unless otherwise approved by the OWNER

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01560

TEMPORARY CONTROLS

PART 1 GENERAL

1 1 SECTION INCLUDES

A Temporary controls required during the term of the Contract for the protection of the environment and the health and safety of workers and general public

B Furnishing all equipment materials tools accessones incidentals and labor and performing all work for the installation of equipment and construction of facilities including their maintenance and operation dunng the term of the Contract

C Temporary controls include but are not limited to the following

1 Dust Control

2 Pollution Control

3 Traffic and Safety Controls

D Perform work as specified in this Specification and as required by OWNER Maintain equipment and accessories in clean safe and sanitary condition at all times until completion of the Contract

1 2 RELATED SECTIONS

A Section 01500 — Construction Facilities

1 3 DUST CONTROL

A Provide dust control measures if specified in the Contract The CONTRACTOR shall obtain a dust control permit from Tooele County if applicable

B Dust control consists of transporting water furnishing required equipment additives accessones and incidentals carrying out proper and efficient measures wherever and as often as necessary to reduce dust nuisance and to prevent dust onginating from construction operations throughout the duration of the Contract as required by OWNER

C Apply water by means of pressure-type distnbutors or pipelines equipped with a spray system or hoses with nozzles that will insure a uniform application of water

D Provide all equipment used for the application of water with a positive means of shut-off

E Unless otherwise permitted by OWNER or unless all the water is applied by means of pipelines provide at least one operations mobile unit with a minimum capacity of 3 500 gallons for applying water at the site during construction

1 4 POLLUTION CONTROL

A Erosion Control Control sediment transport on sloped surfaces Submit a NOI as required by NPDES regulations CONTRACTOR shall prepare and implement a Storm Water Pollution Prevention Plan (SWPPP) which complies with all requirements of the applicable stormwater NPDES permit for construction activities

B Pollution of Waterways Perform work using methods that prevent entrance or accidental spillage of solid or liquid matter contaminants debns and other objectionable pollutants and wastes into streams watercourses flowing or dry and underground water sources Such pollutants and wastes will include but will not be restricted to refuse earth and earth products garbage, cement concrete sewage effluent industrial waste radioactive substances hazardous chemicals oil and other petroleum products aggregate processing tailings and mineral salts Dispose of pollutants and wastes in accordance with applicable permit provisions or m a manner acceptable to and approved by the OWNER

C Storage and Disposal of Petroleum Products

1 Petroleum products covered by this section include gasoline diesel fuel lubncants heating oils and refined and used oil Dunng project construction store all petroleum products in such a way as to prevent contamination of all ground and surface waters

2 Lubricating oil may be brought into the project area in steel drums or other means as CONTRACTOR elects Store used lubricating oil in steel drums or other approved means and return to the supplier for disposal Do not burn or otherwise disposed of at the project area

3 If the total capacity volume of stored petroleum products is greater than 1 320 gallons in total and/or 660 gallons in any single container and these products are stored above ground CONTRACTOR shall prepare and adhere to a Spill Prevention Control and Countermeasure Plan (SPCC Plan) in accordance with applicable EPA and other state regulations

D All chemicals stored on-site must be appropriately labeled as to its content and hazard rating

1 5 TRAFFIC AND SAFETY CONTROLS

A Post construction areas and roads with traffic control signs or devices used for protection of workmen the public and equipment The signs or devices must conform to the American National Standards Institute Manual on Uniform Traffic Control Devices for Streets and Highways

B Remove signs or traffic control devices as soon as they have served their purpose It is particularly important to remove any markings on road surfaces which under conditions of poor visibility could cause a driver to turn off the road or into traffic moving in the opposite direction

C Barricades for protection of employees must conform to the portions of the American National Standards Institute Manual on Uniform Traffic Control Devices for Streets and Highways relating to barricades

D Material Haul on Public Roads Follow all requirements stated in the permits for using public roads for hauling materials to the site

E Provide flag persons properly equipped with International Orange protective clothing and flags as necessary to direct or divert pedestrian or vehicular traffic

F Construct and maintain fences planking barricades lights shoring and warning signs as required by local authorities federal and state safety ordinances and as required to protect OWNER's property from injury or loss and as necessary for the protection of the public and provide walks around any obstructions made in a public place for carrying on the Work covered in this Contract Leave all such protection in place and maintained until removal is authorized

G Guard and protect all workers pedestrians and the public from excavations blasting operations construction equipment all obstructions and other dangerous items or areas by means of adequate railings guard rails temporary walks barricades warning signs sirens directional signs overhead protection planking decking danger lights etc

1 6 MAINTENANCE

A Maintain all temporary controls in good working conditions during the term of the Contract for the safe and efficient transport of equipment and supplies and for construction of permanent works as required by OWNER

1 7 STATUS AT COMPLETION

A Upon completion of the Work or prior thereto when so required by OWNER remove all temporary controls and restore disturbed areas as required by OWNER

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1 1 SECTION INCLUDES

A Products

B Transportation and handling

C Storage and protection

1 2 PRODUCTS

A Products Means new material machinery components equipment fixtures and systems forming the Work Does not include machinery and equipment used for preparation, fabrication conveying and erection of the Work Products may also include existing materials or components required for reuse

B Do not use materials and equipment removed from existing premises except as specifically permitted by the Contract Documents

C Provide interchangeable components of the same manufacturer for similar components

1 3 TRANSPORTATION AND HANDLING

A Transport and handle products in accordance with manufacturer's instructions

B Promptly inspect shipments to assure that products comply with requirements quantities are correct and products are undamaged

C Provide equipment and personnel to handle products by methods to prevent soiling disfigurement and/or damage

D Any damaged materials whether as originally shipped or as a result of handling shall be replaced at no additional cost to the OWNER and with no extension of contract time

1 4 STORAGE AND PROTECTION

A Store and protect products in accordance with manufacturer's instructions with seals and labels intact and legible Store sensitive products in weather-tight climate controlled enclosures

B For exterior storage of fabricated products place aboveground on sloped supports if in accord with manufacturer s handling instructions

C Provide off-site storage and protection when site does not permit on-site storage or protection

D Cover products subject to deterioration with impervious sheet covering Provide ventilation to avoid condensation

E Store loose granular matenals on solid flat surfaces m a well-drained area

F Provide equipment and personnel to store products by methods to prevent soiling disfigurement or damage

G Arrange storage of products to permit access for inspection Penodically inspect to assure products are undamaged and are maintained under specified conditions

H Any products that become damaged dunng storage shall be replaced at no additional cost to the OWNER and with no extension of contract time

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01630

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 GENERAL

1.1 SUMMARY

This Section describes CONTRACTOR procedures for securing approval of proposed product options and substitutions

1.2 PRODUCT OPTIONS

A. The Contract is based on standards of quality established in the Contract Documents

1. In agreeing to the terms and conditions of the Contract the CONTRACTOR has accepted a responsibility to verify that the specified products will be available and to place orders for all required materials in such a timely manner as is needed to meet his agreed construction schedule

2. The OWNER does not agree to the substitution of materials or methods called for in the Contract Documents except as they may specifically otherwise state in writing

B. Materials and/or methods specified by name

1. Where materials and/or methods are specified by naming one single manufacturer and/or model number without stating that equal products will be considered only the material and/or method named is approved for incorporation into the Work

2. Should the CONTRACTOR demonstrate to the approval of the OWNER that a specified material or method was ordered in a timely manner and will not be available in time for incorporation into this Work the CONTRACTOR shall submit to the OWNER such data on proposed substitute materials and/or methods as are needed to help the OWNER determine suitability of the proposed substitution

C. Where materials and/or methods are specified by name and/or model number followed by the words or an equal approved in advance by the OWNER" or similar wording

1. The material and/or method specified by name establishes the required standard of quality

2. Materials and/or methods proposed by the CONTRACTOR to be used in lieu of materials and/or methods so specified by name must in all ways be equal or exceed the qualities of the named materials and/or methods

D. The following products do not require further approval except for interface within the Work

1. Products specified by reference to standard specifications such as ASTM and similar standards

2 Products specified by manufacturer s name and catalog model number

E Where the phrase or equal ' or or equal as approved by the OWNER ' occurs in the Contract Documents do not assume that the materials equipment or methods will be approved as equal unless the item has been specifically so approved in writing for this Work by the OWNER

F The decision of the OWNER shall be final

1 3 DELAYS

A Delays in construction arising by virtue of the non-availability of a specified material and/or method will not be considered by the OWNER as justifying of the agreed Time of Completion

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1 1 SECTION INCLUDES

A Preparation maintenance completion and submission of all project record drawings specifications and related documents

1 2 RELATED SECTIONS

A Section 01300 — Submittals

B Section 01560 — Temporary Controls

1 3 MAINTENANCE OF RECORD DOCUMENTS

A Maintain at the job site one copy of the following Project or Contract Documents for record purposes

1 Drawings

2 Specifications

3 Addenda

4 Change Orders and Work Change Directives

5 Field Orders

6 Reviewed Shop Drawings

7 Clarifications or Explanatory Drawings and Specifications

8 Inspection Reports

9 Laboratory Test Records

10 Field Test Records

B Store documents used for record purposes in the field office or other approved location apart from documents used for construction

C File documents in accordance with the Construction Specification sections

D Maintain documents in clean dry legible condition

E Do not use record documents for construction purposes

F Make documents available at all times for inspection by the OWNER and his authorized representatives

1 4 RECORD DRAWINGS

A Project Drawings

1 Maintain record drawings of all work and subcontracts continuously as the job progresses Keep a separate set of prints for this purpose only and at the job site at all times

2 Keep these drawings up-to-date

3 During the course of construction identify on the drawings the actual locations for all runs of mechanical and electrical work including all site utilities and services installed underground or otherwise concealed Show deviations from the drawings in detail Locate all main runs whether piping or dram lines by dimension and elevation

4 Dunng the course of the construction record as-built information outlined in Section 01052

5 Deliver the final and record set of "as-built' drawings to the OWNER pnor to the OWNER's acceptance of the Project

B Addenda and Change Orders

1 Incorporate changes to the Drawings affected by Addenda Change Orders or Field Orders Identify change by Addendum Change Order or Field Order number and effective date

2 When revised drawings are issued as the basis of or along with addenda or change order incorporate these revised drawings into the record set with appropnate annotation

C Shop Drawings

1 Collect and maintain one complete set of reviewed shop drawings including manufacturer's pnnted catalog cuts and data for record purposes

2 Shop drawings must be filed and maintained separate from project drawings Shop drawings must be filed in 9 inch by 12 inch file folders to the greatest extent possible and be indexed in accordance with the format as herein specified

1 5 RECORD SPECIFICATIONS

A Project Specifications

1 Information changes and notes must be recorded in the specifications in blank areas such as page margins or the backs of opposite pages or on separate sheets inserted in the binder All such information changes and notes must be recorded with red pen or red typewnter ribbon

2 In each section in an appropnate location record the manufacturer trade name catalog number and supplier of each product and item of equipment actually installed

3 The record specifications book must be complete and include all documents and forms listed under Bidding Requirements Contract Forms Contract Conditions and Specifications

B Addenda Change Orders Work Change Directives and Field Orders

1 All Addenda Change Orders Work Change Directives and Field Orders must be incorporated into the front of the specifications book in reverse chronological order Use appropnate page dividers to identify addenda, change orders and to separate addenda from the specifications

2 In addition the changes to the specifications effected by Addenda Change Order Work Change Directives or Field Order must be annotated on the affected page or pages of the specifications or adjacent thereto

1 6 SUBMISSION OF DOCUMENTS

A At completion of the project, and before submitting invoice for final payment deliver record documents to OWNER

B Record documents must be delivered neatly and efficiently packaged

C Submission of record documents must be accompanied with a transmittal letter in tnplicate containing the following information

1 Date of submission

2 Project title and number

3 CONTRACTOR's name and address

4 Title and number of each record document (Shop drawings may be grouped in basic categories or divisions of work)

5 Certification that each document as submitted is complete and accurate

6 Signature of CONTRACTOR or his authonzed representative

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

DIVISION 2

SITEWORK

TABLE OF CONTENTS

SECTION 02110

CLEARING AND STRIPPING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cleaning and stripping grass and other organic material from pond construction area and borrow area as defined on the Drawings

B. Stockpiling stripped material

1.2 RELATED SECTIONS

A. Section 02221 — Excavating and Stockpiling

B. Section 02222 — Engineered Fill and Anchor Trench Backfill

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 PREPARATION

A. Verify that any existing plant life designated to remain is tagged and identified

B. Verify plants to be salvaged are tagged or identified

3.2 PROTECTION

A. Protect plant growth and any features designated to remain

B. Protect survey benchmarks from damage or displacement

3.3 STRIPPING

A. Strip grass roots organic soils and other deleterious materials prior to excavating

B. Strip to a maximum depth of 6 inches below existing ground surface

C. Transport and place all materials in the designated stockpile location on the Drawings or as directed by the OWNER and in accordance with Section 02221

END OF SECTION

SECTION 02221

EXCAVATING AND STOCKPILING

PART 1 GENERAL

1 1 SECTION INCLUDES

A Excavating soil to construct the pond subgrade, and obtaining soils for engineered fill protective soil bedding and anchor trench backfill and stockpiling surplus soils

1 2 RELATED SECTIONS

A Section 02222 — Engineered Fill and Anchor Trench Backfill

B Section 02223 — Liner Foundation Preparation

C Section 02776 — Geocomposite Vent Strip

D Section 02778 — Geomembrane

PART 2 PRODUCTS

2 1 ENGINEERED FILL

A Soil meeting requirements of Section 02222 Part 2 1

2 2 NOT USED

2 3 ANCHOR TRENCH BACKFILL

A Soil meeting requirements of Section 02222 Part 2 3

2 4 SURPLUS SOILS

A Remaining soils excavated

PART 3 EXECUTION

3 1 PREPARATION

A Set required lines levels contours and datum by construction staking

B Locate identify and protect existing landfill facility areas if applicable

C Notify utility company to locate utilities if applicable

D Provide for dust control

E Protect benchmarks existing structures and fences from excavation equipment and vehicular traffic

F Coordinate operations with landfilling operations

G Provide for dewatering as necessary for finish excavation and fill placement

H CONTRACTOR shall note that topography shown on the Drawings may differ from topography at time of construction The CONTRACTOR shall perform a pre-commencement survey to document site conditions prior to starting work

3 2 EXCAVATION

A Excavate soil and rock as required to the lines, grades and elevations to construct the liquid waste pond roads surface waste drainage systems and other structures as necessary as shown on the Drawings

B Grade top perimeter of excavation to prevent surface water from draining into excavation

C Remove lumped subsoil boulders and rock larger than 1 inch in largest dimension from completed subgrade elevation

D Notify OWNER of unexpected subsurface conditions and discontinue affected work in area until notified to resume work

E Correct areas over excavated by placing engineered fill per Section 02222 and as approved by the OWNER

F Selectively excavate engineered fill and anchor trench backfill and stockpile near the liquid waste pond area

G Haul remaining material surplus soils to stockpile(s) designated by OWNER

3 3 SOIL STOCKPILING

A Coordinate selective soil stockpiling with OWNER

B Place soil such that maximum slope is 3H 1V and minimum slope is 5 percent

C Placement and mass configuration of soil stockpiles shall be performed at the direction of the OWNER

D Provide uniform final graded surface for the surplus soil stockpile

3 4 FIELD QUALITY ASSURANCE

A Field quality assurance (QA) will be performed in accordance with the Construction Quality Assurance (CQA) Plan

B The **OWNER** may perform testing to determine the conformance of the materials with these **Specifications** and **Drawings**

END OF SECTION

SECTION 02222

ENGINEERED FILL AND ANCHOR TRENCH BACKFILL

PART 1 GENERAL

1 1 SECTION INCLUDES

A Engineered Fill Placement

B Backfill for Anchor Trench

1 2 RELATED SECTIONS

A Section 02221 - Excavating and Stockpiling

B Section 02223 - Liner Subgrade Preparation

C Section 02776 –Geocomposite Vent Strips

D Section 02778 - Geomembrane

1 3 REFERENCES

A ASTM C136 — Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

B ASTM D422 — Standard Test Method for Particle-Size Analysis of Soil

C ASTM D698 — Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft^3 (600 kN-m/m^3))

D ASTM D1556 — Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

E ASTM D2216 — Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

F ASTM D2487 — Classification of Soils for Engineering Purposes (Unified Soil Classification System)

G ASTM D2922 — Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

H ASTM D3017 — Standard Test Method of Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

PART 2 PRODUCTS

2 1 ENGINEERED FILL

A Soil obtained from designated area on site approved by the Owner

B Free of organic material

C Maximum particle dimension 6 inches

D Free of frozen matenal, ice snow or excessive moisture

2 2 ANCHOR TRENCH BACKFILL

A Select soils obtained from landfill excavation areas associated with landfill construction and from other borrow areas as directed by the OWNER

B Free of organic matenal

C Maximum particle size 3 inch

PART 3 EXECUTION

3 1 ENGINEERED FILL PREPARATION

A Scarify subgrade soils to a 6-inch depth pnor to soil placement

B Pnor to placement of engineered fill verify that no substantial thickness of loose or uncompacted soil is present in the fill area

C Begin engineered fill only when the ENGINEER has accepted the underlying subgrade

3 2 ENGINEERED FILL PLACEMENT

A Place engineered fill to the lines and grades shown on the Drawings

B Place in loose lift thickness not exceeding 8 inches

C Compact each lift to a minimum of 95 percent relative compaction at a moisture content of ±4% of optimum as determined by ASTM D698 Completed lifts of fill cannot yield under equipment loads

D Moisture conditioned and smooth-drum rolled as specified in Section 02223 – Liner Subgrade Preparation

E Grade final surface to a vertical tolerance of ± 0 1 foot

3 3 BACKFILL FOR ANCHOR TRENCH

A Begin only when geosynthetic installations have been completed in accordance with deployment and seaming cntena

B Place backfill to the lines and grades shown on the Drawings

C Place in loose lift thickness not exceeding 12 inches

D Compact each lift by wheel rolling with rubber-tired equipment or using approved compaction equipment

E Do not damage geosynthetic installations

3 4 FIELD QUALITY ASSURANCE

A Field quality assurance (QA) will be performed in accordance with the Construction Quality Assurance (CQA) plan

B The OWNER will determine optimum moisture content and maximum density for all engineered fills m accordance with ASTM D698

C The OWNER will determine in-place density and moisture content by one or more of the following methods or approved equal ASTM D1556 ASTM D2216 ASTM D2922 and ASTM D3017

D The OWNER may perform additional testing to determine the conformance of the materials with these Specifications and the Drawings

E The OWNER may perform sampling and testing of excavated matenals as they are stockpiled

F The CONTRACTOR shall cooperate fully with the OWNER in performance of sampling and testing Include costs for assistance in unit or lump sum prices

END OF SECTION

SECTION 02223

LINER SUBGRADE PREPARATION

PART 1 GENERAL

1 1 SECTION INCLUDES

A Final grading and compaction of finished subgrade in preparation for geomembrane placement

1 2 RELATED SECTIONS

A Section 02221 — Excavating and Stockpiling

B Section 02222 — Engineered Fill Protective Soil Cover and Anchor Trench Backfill

C Section 02778 — Geomembrane

1 3 REFERENCES

A ASTM D698 — Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft^3 (600 kN-m/m^3))

B ASTM D1556 — Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method

C ASTM D2216 — Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

D ASTM D2922 — Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

E ASTM D2937 — Standard Test Method for Density of Soil in Place by the Drive Cylinder Method

F ASTM D3017 — Standard Test Method of Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

PART 2 PRODUCTS

2 1 LINER SUBGRADE

A The liner subgrade shall be smooth drum rolled to provide firm smooth surface

B The liner subgrade shall not contain any deletenous materials debris organic matter ice, snow or frozen matenal

C The subgrade soils shall have a maximum particle size of 1 inch at the subgrade surface and in the uppermost lift adjacent to the liner matenals

2 2 SOURCE QUALITY CONTROL

A Perform quality control planning and procedures to assure that deleterious materials are not incorporated into engineered fill

B Coordinate source quality control program with OWNER

PART 3 EXECUTION

3 1 EXAMINATION

A Verify that subgrade is complete and in compliance with slopes and dimensions shown on the Drawings

B Examine surface to determine whether unsuitable materials are present

C Verify surface is free of ponded water before Geomembrane is placed

D The subgrade surface will be examined and accepted in writing by the liner INSTALLER and OWNER prior to placement of geosynthetics

3 2 FIELD QUALITY ASSURANCE

A Field quality assurance (QA) will be performed in accordance with the Construction Quality Assurance (CQA) plan

B The OWNER may perform additional testing to determine the conformance of the materials with these Specifications and the Drawings

3 3 FINISHED GRADING AND COMPACTION OF LINER SUBGRADE

A Moisture condition subgrade if necessary and smooth drum roll the material to provide smooth firm surface

B Finish grade soil within a vertical tolerance of plus or minus 0 1 feet of design grade

C Subgrade shall be steel-drum rolled to a smooth and level surface

D Surface shall be free of stones or protrusions greater than 1-inch diameter and organics or other deleterious material

E Fill voids and cracks

F Ruts shall be limited to 1 inch maximum depth

G After proof-rolling and compacting with a smooth drum roller the Owner or Owner's representative will accept the liner subgrade surface if the surface is smooth firm and no materials greater than one inch in dimension are visible and no soft areas are present

END OF SECTION

SECTION 02227

LEAK DETECTION LAYER GRAVEL

PART 1 GENERAL

1 1 SECTION INCLUDES

A Description of granular drainage materials for the leak detection layer

B Work includes furnishing loading hauling and placing the drainage materials

1 2 RELATED SECTIONS

A Section 02711 – HDPE Pipe

B Section 02771 - Geotextile

C Section 02776 – Drainage Geocomposite

D Section 02778 - Geomembrane

1 3 REFERENCES

A ASTM D136 - Standard Method for Sieve Analysis of Fine and Coarse Aggregates

B ASTM D2434 - Standard Method for Permeability of Granular Soils (Constant Head)

C ASTM D2488 - Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)

1 4 SUBMITTALS

A Submit a 50-pound representative sample of the proposed drainage granular material within 10 days after contract award

PART 2 PRODUCTS

2 1 DRAINAGE GRAVEL

A Material obtained and imported from off-site

B Free of organic or other deleterious material

C Having a hydraulic conductivity greater than or equal to 0 5 cm/sec when placed in accordance with this specification

D Rounded to sub-rounded gravel

E Required gradations as shown in Table 02227-1

TABLE 02227-1
LEAK DETECTION LAYER GRAVEL GRADATION

U S SIEVE SIZE	PERCENT PASSING
1½-inch	100
½-inch	0-5
No 200	0-2

F The permeability specification controls over the gradation specification

G Material must be hard durable and not subject to gram crushing

PART 3 EXECUTION

3 1 PLACEMENT

A Place materials only when underlying excavations foundations and geosynthetic installations are complete and accepted by OWNER in accordance with Specifications

B Place to lines and grades shown on the Construction Drawings

C Place to the thickness shown on the Construction Drawings

D Place without damaging underlying geosynthetics The CONTRACTOR shall repair any damage at no additional cost to the OWNER

E Do not cause underlying geosynthetics to bridge across ditch or pipe alignments If bridging does occur repair at no additional cost to the OWNER

F Construct minimum 36-inch thick haul routes over geomembrane Use protective soil cover layer soil to construct roads The 36-inch minimum thickness applies to haul routes stockpiles and initial spreading areas Any loaded scraper or rubber tired equipment with can only be driven over the liner on a haul road consisting of a minimum 36-inch thick protective soil cover

G Spread and place using low ground pressure dozers and graders Alternative equipment may be used with prior approval of the OWNER or ENGINEER Alternative equipment may require increased thicknesses of haul routes over installed geomembrane

H Place during the cool part of the day when the liner is relatively tight and free of wrinkles

3 2 LEAK DETECTION AND PIPE INSTALLATION

A Comply with Section 02710 for assembly of pipe runs

B Install to the lines and grades shown on the Construction Drawings

3 3 FIELD QUALITY CONTROL

A Prior to beginning drainage layer material placement, demonstrate that placement techniques will not damage the underlying geomembrane material Demonstrate this by

constructing test fill over all affected geosynthetic types in an area not part of final construction

B Do not use pointed stakes as grade control devices Only use devices that will not puncture underlying geomembrane

C Grade top perimeter of excavation to prevent surface water from draining into excavation

3 4 FIELD QUALITY ASSURANCE

A Sampling and testing of materials to determine material type may be performed by the OWNER at the stockpile at the material source or at the place of use in accordance with the CQA Plan

B The OWNER will perform gradation tests of materials before and during placement in accordance with ASTM D422

C The OWNER will perform permeability tests of materials before and during placement operations in accordance with ASTM D2434

D Assist the OWNER as necessary in collecting material samples and conducting tests

E OWNER reserves the option of waiving gradation specifications if products submitted by CONTRACTOR meet design intent

END OF SECTION

SECTION 02231

AGGREGATE BASE

PART 1 GENERAL

1 1 SECTION INCLUDES

A Placing and grading aggregate base course

B Application of magnesium chloride binding and dust control agent

1 2 RELATED SECTIONS

A Section 02222 – Engineered Fill and Anchor Trench Backfill

1 3 REFERENCES

A ASTM D 698 Standard Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures

B ASTM D 2922 Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

C ASTM D 3017 Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

D ASTM C 136 Standard Test Method for Sieve Analysis for Fine and Coarse Aggregates

E Utah Department of Transportation Standard Specifications Section 02721 – Untreated Base Course

PART 2 PRODUCTS

2 1 AGGREGATE BASE

A Obtained from off-site source

B In accordance with Utah Department of Transportation Standard Specifications Section 02721 – Untreated Base Course for 1 Aggregate Base

PART 3 EXECUTION

3 1 EXAMINATION

A Verify that the substrate has been inspected the grades and elevations are correct and the surface is suitable for aggregate placement

3 2 PREPARATION

A Correct irregularities in substrate gradient and elevation by scarifying, to a minimum depth of 4 inches reshaping and re-compacting to a minimum of 95% of maximum dry density as detailed by ASTM D 698

B Do not place fill on soft muddy or frozen surfaces

3 3 AGGREGATE PLACEMENT

A Spread aggregate over prepared substrate in maximum 6 or 8-inch loose lifts

B Steel drum roller compact to a thickness of 4 or 6 inches (as shown on the Drawings) at 95% of maximum dry density as determined by ASTM D 698

C Level and contour surfaces to elevations and grades indicated on Drawings

D Add small quantities of fine aggregate to coarse aggregate as appropnate to assist compaction

E Add water to assist compaction If excess water is apparent remove aggregate and aerate to reduce moisture content

F Use mechanical tamping equipment in areas inaccessible to compaction equipment

3 4 TOLERANCES

A Flatness Maximum vanation of ½ inch measured with 10-foot straight edge

B Scheduled Compacted Thickness Within ½ inch

C Variation From Design Elevation Within 0 1 inch

3 5 QUALITY ASSURANCE VERIFICATION TESTING

A The OWNER s representative will perform the following quality assurance testing dunng road base placement

1 Moisture-density relations (ASTM D 698) to determine the maximum dry density and optimum moisture content for road base matenal

2 Nuclear density and moisture content (ASTM D 2992 and ASTM D 3017) to venfy relative compaction

3 Sieve Analysis (ASTM C 136) to venfy product gradation requirements for road base

B Cooperate with the OWNER s representative in performance of quality assurance venfication testing

C If tests indicate Work does not meet specified requirements remove Work replace and retest

END SECTION

SECTION 02270

EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1 1 SECTION INCLUDES

A As needed the installation of the following

1 Silt Fence

2 Straw Bale Barner

B Areas to receive erosion and sediment controls shall be determined in the field as needed by the OWNER

C Areas requinng erosion and sediment control will include the soil stockpile

1 2 RELATED SECTIONS

A Section 02221 – Excavating and Stockpiling

B Section 02222 – Engineered Fill and Anchor Trench Backfill

1 3 REQUIREMENTS

A Meet regulatory requirements for construction of this project Implement erosion control practices and procedures If the erosion control measures are inadequately maintained or are found to be inadequate in the field install additional measures to prevent sediment laden runoff from leaving the site

1 4 SEQUENCING AND SCHEDULING

A All erosion control features must be approved by the OWNER before beginning site earthwork

B Route runoff from cleared or disturbed areas Route through temporary sediment traps straw bale barners, or silt fences Place erosion control facilities pnor to any earthwork, clearing and grubbing It is preferable for construction to progress in an upstream direction starting with downstream erosion control facilities as the first items of construction

C Stabilize disturbed ground at the end of each work day Perform surface roughening immediately upon reaching final grade of non-lined areas by uniformly track-walking up and down the slope with a crawler tractor or sheepsfoot roller leaving a pattern of cleat impnnts that parallel the slope contours Implement permanent soil stabilization and erosion/sedimentation controls upon reaching final grade

D Notify the OWNER of any soils showing signs of erosion

E Ensure that all waters from any dewatenng operations reaching existing water courses meet or exceed the existing quality of the water course

1 5 REMOVAL OF EROSION CONTROL FACILITIES

A Remove all temporary control facilities, 30 days after final completion of work or upon approval of OWNER Dispose of used silt fence and supports straw bales, and sediment traps Costs for removal of erosion control features are incidental and shall be included in lump sum or unit costs Final payment will not be released until this work is completed

PART 2 PRODUCTS

2 1 GENERAL

A Product specifications described below pertain to erosion control facilities shown on the Construction Drawings

2 2 SILT FENCE

A Woven geotextile supplied in minimum 3 5 foot widths and meeting the requirements of Table 02270-1

TABLE 02270-1
WOVEN GEOTEXTILE PROPERTIES

TEST	TEST DESIGNATION	UNIT	REQUIREMENT
Grab Tensile Elongation	D4632	%	50 - 114
Grab Tensile Strength	D4632	lbs	100 min
Puncture Resistance	D4833	lbs	60 min
Permitivity	D4491	Sec [1]	0 1 - 0 5
Apparent Opening Size	D4751	mm	0 5 - 0 85
Burst Strength	D3786	psi	190 min

B Support Fence 2-inch by 2-inch by 14-gage wire mesh fencing in 3-foot-wide rolls

C Posts 2-inch by 2-inch by 4 5-foot-long standard (or better) hardwood posts or 4 5-foot-long steel fence posts weighing 1 33 pounds per linear foot

D Fasteners Heavy duty wire staples at least 1-inch-long tie wires or hog rings

E Gravel Backfill LCRS Granular Matenal

2 3 STRAW BALE BARRIER

A Bales Straw bales minimum size 15-inch x 15-inch x 36 inch

B Posts Per 2 2 C

PART 3 EXECUTION

3 1 PREPARATION AND APPLICABILITY

A CONTRACTOR will hydroseed all exposed soil surfaces not to receive any type of liner or finish course once finish grading is complete

3 2 SILT FENCE INSTALLATION

A Drive fence posts a maximum of 18 inches below the soil surface elevation (outside of finish cover system) at a maximum spacing of 6 feet in areas requiring silt fence The fence line should be at a constant elevation for each continuous length of silt fence

B Place wire mesh support fencing and fabric back-to back (fabric on the upslope side) and extend 12 inches into the trench leaving 24 inches of fencing and fabric above ground level Fasten filter fabric and wire mesh support fencing to posts using heavy-duty 1-inch wire staples for wood posts or wire rings for steel posts At each post place fasteners at the top of the fence at ground level and halfway in between

C Join wire support fence ends by overlapping a minimum of 6-inches and connecting the two sections with wire rings in four places If fabric joints are necessary cut the wire support fence sandwich the wire and fabric ends between two wood posts and bind the posts tightly together

D Lengthwise along the top of the silt fence and at ground level tie fabric to wire support fencing with wire rings at a maximum spacing of 3 feet Backfill trench with LCRS drainage gravel material

3 3 STRAW BALE BARRIER CONSTRUCTION

A Excavate a one bale wide strip of soil 4-inches-deep perpendicular to the flow direction in the channel Remove all grass and other materials that may allow underflow

B Install straw bales end-to-end with the bindings oriented horizontally around the sides of the bales Anchor each bale into trench Push bales together as firmly as possible

C Chink the gaps between bales with straw to prevent water from escaping between bales This must be done carefully to avoid separating the bales Place and compact excavated soils against the upstream side of the straw bale barrier to a height of 4 inches to prevent piping under bales

3 4 MAINTENANCE

A General Requirements Observe the facilities during the first storm following construction to ensure that the facilities are properly located constructed and operating as designed Maintain and repair facilities as needed to ensure that they continue to work as designed

B Silt Fence Check for sagging fences torn fabric and signs of erosion and/or sedimentation down slope of the fence Make repairs as necessary If the silt fence fails due to storm water runoff inundating the fence, construct additional erosion and sediment control measures to remove sediment from and convey the runoff to downstream drainage facilities Remove accumulated sediment behind silt fences whenever it reaches approximately one-third the height of the fence

C Temporary Sediment Traps Remove sediment before it reaches the rock weir outlet The trap bottom may be over-excavated to provide additional sediment storage

D Straw Bale Barner Check for undercutting damaged bales evidence of erosion or sedimentation between bales, and end run" erosion at the ends of the barner Make repairs replace bales and remove sediment before it reaches approximately one-half the height of the barner

END OF SECTION

SECTION 02710

POLYETHYLENE PIPE

PART 1 GENERAL

1 1 SECTION INCLUDES

A Furnish and install High Density Polyethylene (HDPE) solid pipe HDPE perforated pipe and associated pipe fittings for leak detection layer in accordance with the Construction Drawings Pipe sizes and Standard Dimensional Ratio (SDR) are shown on the Construction Drawings

1 2 RELATED SECTIONS

A Section 02222 – Engineered Fill and Anchor Trench Backfill

B Section 02227 – Leak Detection Layer Gravel

C Section 02771 - Geotextile

D Section 02776 – Geocomposite Vent Snp

E Section 02778 - Geomembrane

1 3 REFERENCES

A Amencan Society for Testing and Matenals (ASTM)

1 ASTM D638 - Standard Test Method for Tensile Properties of Plastics

2 ASTM D696 - Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics

3 ASTM D746 - Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

4 ASTM D790 - Standard Test Method for Flexural Properties of Unreinforced and Reinforced Plastics and Electncal Insulating Matenals

5 ASTM D1238 - Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer

6 ASTM D1248 - Specification for Polyethylene Plastics Molding and Extrusion Materials

7 ASTM D1505 - Standard Test Method for Density of Plastics by the Density-Gradient Technique

8 ASTM D1525 - Standard Test Method for Vicat Softening Temperature of Plastics

9 ASTM D1599 - Standard Test Method for Short-Time Hydraulic Failure Pressure of Plastic Pipe Tubing and Fittings

10 ASTM D1603 - Standard Test Method for Carbon Black in Olefin Plastics

11 ASTM D1693 - Standard Test Method for Environmental Stress-Cracking of Ethylene Plastics

12 ASTM D2122 - Method for Determining Dimensions of Thermoplastic Pipe and Fittings

13 ASTM D2240 - Standard Test Method for Rubber Property □ Durometer Hardness

14 ASTM D2657 - Practice for Heat Joining of Polyolefin Pipe and Fittings

15 ASTM D2837 - Method for Obtaining Hydrostatic Design Basis for Thermoplastic Pipe Materials

16 ASTM D3035 - Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Controlled Outside Diameter

17 ASTM D3261 - Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing

18 ASTM D3350 - Specification for Polyethylene Plastics Pipe and Fittings Materials

19 ASTM D4218 - Standard Test Method for Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique

20 ASTM F1248 - Determination of Environmental Stress Crack Resistance (ESCR) of Polyethylene Pipe

21 ASTM F714 - Specification for Polyethylene (PE) Plastic Pipe (SDR-PR) Based on Outside Diameter

B National Sanitation Foundation (NSF) NSF Standard Number 14 -Plastics Piping Components and Related Matenals

C PPI -Plastic Pipe Institute

D ANSI -Amencan National Standards Institute

1 4 SUBMITTALS

A Submit with each shipment of pipe to site MANUFACTURER'S certification of compliance with specified requirements of this Section Submit catalog cut sheet of pipe and fittings to be supplied prior to commencing work

B Provide written certification for qualified HDPE pipe fusion welders

PART 2 PRODUCTS

2 1 PIPE AND FITTINGS

A High density polyethylene (HDPE)

1 Material Designation PE 3608

2 Cell Classification 345464 C

B All pipe sizes shown on the Construction Drawings and specified in this Section reference nominal diameter unless otherwise indicated on the Construction Drawings or in this Section Pipe sizing and workmanship to be in accordance with ASTM F714 and ASTM D3035

C Conforming to the minimum requirements of Table 02710-1

TABLE 02710-1

POLYETHYLENE PIPE MATERIAL PROPERTIES

PROPERTY	ASTM TEST DESIGNATION	UNIT	MINIMUM REQUIREMENTS
Density	D1505	gm/cm^3	0 955
Melt Index	D1238	gm/10 mm	<0 14
Flexural Modulus	D790	psi	110,000
Tensile Strength	D638	psi	3 200
Hydrostatic Design Basis	D2837	psi	1 600
UV Stabilizer	D1603	% Carbon Black	2%
Elastic Modulus	D638	psi	110 000
Brittleness Temp	D746	°F□	<-103°F
Vicat Softening Temp	D1525	°F□	+255°F
Thermal Expansion Coef	D696	in/m/°F	8x10^{-5}
Hardness	D2240	Shore "D"	64

D Containing no recycled compound except that generated in the Manufacturer's own plant and from resin of the same specification from the same raw material supplier

E Resin for pipe and fittings to be listed by both N S F and P P I and manufactured in accordance with ASTM D3350 and ASTM F714

F Homogeneous throughout and free of visible cracks holes (except where specified or shown) foreign inclusions or other injurious defects Being uniform in color capacity density and other physical properties

G. Provide pipe with the following information continuously marked on the pipe or spaced at intervals not exceeding 5 feet

1 Name and/or trademark of the pipe manufacturer

2 Nominal pipe size

3 Standard Dimensional Ratio (SDR)

4 PE 3608

5 Manufacturer's Standard Reference

6 A production code from which the date and place of manufacture can be determined

2 2 FITTINGS

A Provide fittings manufactured from the same class of materials and fully compatible with the HDPE pipe

B Provide fittings manufactured in accordance with ASTM D3350 and ASTM D3261 Provide fabricated fittings with pressure ratings matching or exceeding the HDPE pipe

2 3 PERFORATED PIPE

A Pipe perforation details are shown on the Construction Drawings

B Remove all drill hole filings from the interior of the pipe prior to installation OWNER will visually inspect all pipe prior to installation fusion welding or slip coupling

PART 3 EXECUTION

3 1 PIPE INSTALLATION GENERAL REQUIREMENTS

A When shipping delivering and installing pipe fittings, and accessories do so in such manner to ensure a sound undamaged installation

B Provide adequate storage for all materials and equipment delivered to the job site

C Handle and store pipe and fittings in accordance with the Manufacturer's recommendations

3 2 PLACING AND LAYING PIPE

A Provide required maintenance of all such materials and equipment used to handle place and lay pipe

B Follow the Manufacturer s recommendations when hauling, unloading and stringing the pipe

C Take precautions to prevent damage to the pipe

D Do not push pull or drag pipe and fittings over sharp projections or drop or have objects dropped on the pipe and fittings

E Inspect for defects before and during installation Remove any piping showing kinks buckles, cuts gouges or any other damage, which in the opinion of the OWNER will affect performance of the pipe

F Replace material found to be defective before or after laying with sound material at no additional expense to the OWNER

G Carefully lower pipe and accessories into the trench

H Under no circumstances drop or dump materials into the trench

I Rest the full length of each section of pipe solidly upon the pipe bedding or on rub-sheets

J Take up or relay pipe that has had the grade disturbed while joining or laying the pipe

3 3 JOINING PIPE

A Join the HDPE pipe by the method of thermal butt or side wall fusion as outlined in ASTM D2657 Perform fusion joining of pipe and fittings in accordance with the procedures established by the pipe MANUFACTURER Of particular importance is the use of proper interface pressures and heater plate temperatures

B A slip coupling may be used on HDPE pipe in the LCRS system provided there is a minimum 2 foot overlap and a snug fit is attained

C Use fusion pressures temperatures and cycle times according to pipe Manufacturer's recommendations Only use personnel adequately trained and qualified in the technique involved

D Do not perform pipe fusion in water or when trench conditions are unsuitable for the work Keep water out of the trench until joining is completed Secure open ends of pipe and close valves when work is not in progress, so that no trench water earth animals or other substance will enter the pipe or fittings Plug cap or valve off pipe ends left for future connections as shown on the Construction Drawings

E Clear and grade fusion welding sites if necessary to provide enough space for pipe storage and fusion equipment Keep the site free of rocks stumps and debris which could cut, scar or gouge the pipe In order to allow the joining operation to continue in adverse weather conditions a shelter may be required for the joining machine Particular caution should be exercised to prevent water from entering the inside of the pipe and from coming in contact with the heater plate

F Polyethylene Fusion Qualification All pipe fusion welding must be performed by the supplier, or a factory supplied and/or certified fusion welding operator

G Provide for instruction testing and installation training sessions as required to obtain training for welding personnel including quality control personnel in polyethylene fusion machine operation instruction and familiarization with HDPE pipe and fitting fusion for the project Only fully trained personnel will be allowed to perform the installation supervision or inspection of polyethylene-fusion joints Submit to the OWNER prior to beginning fusion welding a list of those personnel authorized instructed and certified for polyethylene fusion Make all on-site training sessions conducted during the work available to quality assurance personnel at no charge to the OWNER

H Training Provide assistance from the manufacturer/supplier in instructing welding personnel in proper fusion welding procedures and techniques Notifications will be required in writing listing the names of those persons so familiarized A Manufacturer's

representative shall be certified in writing by the MANUFACTURER to be technically qualified and experienced in fusion welding of HDPE pipe

I After completion of the pipe fusion welding the CONTRACTOR shall ream the inside of the pipes such that the inside bead of the weld is removed and the interior is smooth

J When two pipes of different diameters must be joined, the CONTRACTOR shall join the pipe with an appropriate transition fitting Transition fittings shall be beveled and reamed if necessary to provide a relatively smooth inner surface at the joint

END OF SECTION

SECTION 02771

GEOTEXTILE

PART 1 GENERAL

1 1 SECTION INCLUDES

A Furnishing and installation of geotextile

1 2 RELATED SECTIONS

A Section 02222 – Engineered Fill and Anchor Trench Backfill

B Section 02227 – Leachate Collection Gravel

C Section 02776 –Geocomposite Vent Strip

D Section 02778 –Geomembrane

1 3 REFERENCES

A ASTM D885 - Methods for Testing Industrial Filament Yarns Made From Man-made Fibers

B ASTM D1777 - Method for Measuring Thickness of Textile Materials

C ASTM D4355 - Standard Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water

D ASTM D4491 - Standard Test Method for Water Permeability of Geotextiles by Permittivity

E ASTM D4533 - Standard Test Method for Trapezoid Tearing Strength of Geotextiles

F ASTM D4595 - Standard Test Method for Tensile Properties by the Wide-width Strip Method

G ASTM D4632 - Standard Test Method for Breaking Load and Elongation of Geotextiles (grab method)

H ASTM D4751 - Standard Test Method for Determining Apparent Opening Size of a Geotextile

I ASTM D4833 - Standard Test Method for Index Puncture Resistance of Geotextiles Geomembranes and Related Products

J ASTM D5216 - Standard Test Method for Mass Per Unit Area (weight) of Woven Fabric

1 4 DEFINITIONS

A MANUFACTURER Responsible for the production of geotextile rolls

B INSTALLER The party responsible for field handling storing, deploying repairing anchoring and any other aspects of installing the geotextile

C Construction Quality Assurance Consultant (CQAC) The party independent from the manufacturer or installer, responsible for observing and documenting activities related to the quality assurance of the production and installation of the geosynthetic components of the geotextile Also responsible for issuing a construction monitoring report and certification sealed by a Registered Professional ENGINEER

1 5 SUBMITTALS

A Submit, prior to confirmation of OWNER-CONTRACTOR Agreement samples and complete description of geotextile fabric proposed for use that meets or exceeds the requirements of this section Include certified minimum property values and test methods used to obtain property values Also include production capacity available and projected delivery dates

B Submit prior to installation written instructions for storage handling installation and seaming of proposed geotextile

C Submit prior to installation written instructions for repair of geotextile

D Submit prior to delivery manufacturer's certificates of compliance with specified product requirements This submittal includes Manufacturer's Quality Control (MQC) testing certificates notarized by responsible party Include lot batch and roll numbers sampling procedures test procedures and test results (Refer to paragraph 2 04 of this section)

E Warranty Submit to OWNER prior to installation manufacturers and installers written warranty against product and installation defects Limits of liability must be accepted by the OWNER

PART 2 PRODUCTS

2 1 GENERAL

A Products comprised of non-woven needle punched polypropylene or polyester fabric oriented into a staple network that maintains its structure during handling placement and long-term service

B The product cannot be heat burnished

C Resistant to soil and leachate chemicals

D New product made from virgin materials

2 2 GEOTEXTILE

A Geotextile used for filtration shall conform to the minimum average roll values (MARV) as defined in Table 02771-1

TABLE 02771-1
GEOTEXTILE PROPERTIES

TEST	TEST DESIGNATION	REQUIREMENT
Mass per Unit Area	ASTM D5261	8 oz/yd^2
Grab Tensile and Elongation	ASTM D4632	Minimum 220 lbs and 50%
Puncture Resistance	ASTM D4833	Minimum 120 lbs
Trapezoidal Tear	ASTM D4533	Minimum 95 lbs
Permittivity	ASTM D4491	Minimum 110 gal/min/ft^2

2 3 MANUFACTURER SOURCE QUALITY CONTROL

A The MANUFACTURER shall sample and test the geotextiles at a minimum of once for every 100 000 sq ft Test results shall demonstrate that the material conforms to all requirements in Part 2 2 of this Section except for UV Resistance which shall be certified by the MANUFACTURER

B OWNER will reject rolls for which quality control requirements are not met

C Certify the quality of the rolls of geotextile

D Provide quality control certificates for each lot and each shift's production The quality control certificates must include

1 Roll numbers and identification

2 Sampling procedures

3 Results of quality control tests including a description of test methods used

2 4 LABELING

A Mark or tag geotextile rolls with the following information

1 Manufacturer's name

2 Product identification

3 Lot number or date

4 Roll number

5 Roll dimensions

B Mark special handling requirements on rolls

PART 3 EXECUTION

3 1 EXAMINATION

A Prior to installation of geotextile examine underlying construction for conformance with specifications

3 2 PROTECTION

A When placing soil materials over geotextile ensure the following

1 No damage to geotextile

2 No slippage of geotextile on underlying layers

3 No excessive tensile stresses in the geotextile

B Ensure that geotextile filter is covered within 30 days

3 3 DELIVERY STORAGE AND HANDLING

A Protect geotextile from ultraviolet light exposure precipitation inundation mud dirt dust puncture cutting and other damaging or deleterious condition

B Ship geotextile in closed trailer

C Immediately restore damaged protective covering

3 4 DEPLOYMENT

A Follow Manufacturer s recommendations standards and guidelines

B Roll geotextile down slope keeping the geotextile sheet in sufficient tension to prevent folds and wrinkles

C Weight geotextile with sandbags or equivalent to ballast during deployment Leave ballast in place until geotextile is covered with succeeding construction layer

D Cut geotextile using approved cutter only Take care to protect other in-place geosynthetic materials when cutting geotextile

E Do not trap excessive dust, stones or moisture in geotextile that could damage or clog drains or filters or hamper subsequent seaming

F Examine geotextile over entire completed surface to ensure that no potentially harmful foreign objects such as needles are present Remove any foreign objects

3 5 SEAMS AND OVERLAPS

A Overlap geotextile as required by the seaming technique and as recommended by Manufacturer prior to seaming

B For slopes steeper that 10 percent sew all seams for geotextiles

C All seams shall be either "double prayer" or "single J" seam

D Ensure that no soil materials are inadvertently inserted beneath the seams of geotextiles

E For slopes less than 10 percent geotextiles can be either sewn as indicated above or heat welded

F Heat welded seaming shall be performed in a manner that does not damage the underlying geosynthetics and prevents burn-outs in the geotextile All damage geosynthetics and burn-outs shall be repaired as provided in these specifications

G Sew with polymeric thread having chemical resistance and strength properties equal to or exceeding those of geotextile

H For sewing use a 401 two-thread chain stitch or equivalent

3 6 REPAIRS

A Repair holes burn-outs or tears in geotextiles with a patch from the same geotextile material by sewing or heat welding (as described above) in place with a minimum seam overlap of 12 inches in all directions

B Sew the geotextile within 1 inch of the outside edge of the patch materials

C If tear exceeds 50 percent of the roll width remove and replace the roll

D No patches will be allowed within 1 inch of a panel edge

E Remove any soil or other material which may have penetrated the torn geotextile

F Notify OWNER and CQA Consultant of all repairs

3 7 FIELD QUALITY ASSURANCE

A Samples of geotextile delivered to the site shall be collected for conformance testing at a minimum frequency of one (1) per hundred thousand (100 000) square feet of geotextile to determine product compliance with specified values

B Samples will be taken across the entire width excluding the first 3 feet of the roll unless otherwise approved Sample size will be 3-feet-long by the roll width

C The CQA consultant shall observe all repair operations

3 8 ACCEPTANCE

A CONTRACTOR retains all ownership and responsibility for geotextiles until acceptance by OWNER

B OWNER accepts geotextiles when all the following have been completed

1 The installation is complete

2 Conformance tests verify product requirements

3 Documentation of installation is complete including the CQA consultant s final report

4 Verification of the adequacy of all seams and repairs including associated testing, is complete

5 Written certification documents have been received by the OWNER

END OF SECTION

SECTION 02776

GEOCOMPOSITE VENT STRIPS

PART 1 GENERAL

1 1 SECTION INCLUDES

A Furnishing all labor matenals and equipment necessary for installing the Geocomposite vent stnps in accordance with the Specifications and the Construction Drawings

B Geocomposite descnbed in this section will be geonet with geotextile heat bonded on two sides pnor to delivery to the site

1 2 RELATED SECTIONS

A Section 02222 — Engineered Fill and Anchor Trench Backfill

B Section 02778 – Geomembrane

1 3 REFERENCES

A ASTM D792 — Standard Test Method for Density and Specific Gravity (Relative Density) of Plastics by Displacement

B ASTM D1603 — Standard Test Method for Carbon Black in Olefin Plastics

C ASTM D4491 — Standard Test Methods for Water Permeability of Geotextiles by Permittivity

D ASTM D4533 — Standard Test Method for Trapezoid Tearing Strength of Geotextiles

E ASTM D4716 — Standard Test Method for Constant Head Hydraulic Transmissivity of Geotextiles and Geotextile Related Products

F ASTM D4751 — Standard Test Method for Determining Apparent Opening Size of a Geotextile

G ASTM D4833 — Standard Test Method for Index Puncture Resistance of Geotextiles Geomembranes and Related Products

H ASTM D4873 — Standard Guide for Identification Storage and Handling of Geosynthetic Rolls and Samples

I ASTM D5035 — Standard Test Method for Breaking Strength and Elongation of Textile Fabncs (Stnp Method)

J ASTM D5199 — Standard Test Method for Measunng Nominal Thickness of Geotextiles and Geomembranes

K ASTM D5261 — Standard Test Method for Measunng Mass per Unit Area of Geotextiles

L ASTM D7005 — Standard Test Method for the Determination of Adhesion and Bond Strength of Geocomposites

1 5 DEFINITIONS

A Batch A quantity of resm usually the capacity of one railcar used in the fabncation of high density polyethylene (HDPE) geocomposite A roll number corresponding to the particular quantity of resm used will identify the finished product

B Construction Quality Assurance Consultant (CQAC) The party independent from MANUFACTURER or INSTALLER that is responsible for observing and documenting activities related to the quality assurance of production and installation of the geosynthetic components of the lining system

C Construction Quality Assurance (CQA) Laboratory The party independent from the OWNER MANUFACTURER Fabricator and INSTALLER responsible for conducting tests on samples of geosynthetics obtained at the site

D Construction Quality Assurance (CQA) Monitor The site representative of the CQAC

E Fabncator The party responsible for the fabncation of geocomposite panels constructed from rolls received from the MANUFACTURER

F Geocomposite MANUFACTURER The party responsible for the production of the geocomposite rolls from resm and for the quality control of the resin

G Geocomposite Subsurface The surface on which the geocomposite lies

H INSTALLER The party responsible for field handling transporting stonng deploying seaming temporanly restraining (against wind) and installing the geocomposite

1 6 SUBMITTALS

A Product Data Submit the following to the OWNER pnor to confirmation of OWNER CONTRACTOR Agreement

1 Resin Data

a Statement of production date or dates

b Certification stating that the geonet resm meets the product requirements (see Paragraph 2 3)

c Certification stating that all resm is from the same MANUFACTURER

d Copy of quality control certificates issued by MANUFACTURER

e Test reports from MANUFACTURER

2 Geocomposite Rolls

a Statement of production date or dates and MANUFACTURER s certificates for each day's production

b Laboratory test results and certification stating that the geocomposite meets the product requirements of Part 2

c Certification stating that all geocomposite rolls are furnished by one supplier and that all rolls are manufactured from one resm type obtained from one resm supplier

d Copy of quality control certificates issued by MANUFACTURER and including designation of test methods used Also include roll numbers batch numbers lot numbers, and roll identification

e Test reports from the MANUFACTURER

f Geocomposite delivery storage and handling instructions

g Geocomposite installation instructions

1 7 QUALIFICATIONS

A MANUFACTURER/Fabncator/Installation Qualifications

1 8 QUALITY ASSURANCE

A The OWNER will engage and pay for the services of (1) Construction Quality Assurance Consultant (CQAC)

1 9 DELIVERY STORAGE AND HANDLING (MANUFACTURER)

A General Conform to the MANUFACTURER's requirements

B Delivery

1 Deliver matenals to the site only after the OWNER accepts required submittals

2 Separate damaged rolls from undamaged rolls and store at locations designated by the OWNER until OWNER determines proper disposition of material

3 OWNER will determine if rolls considered damaged

4 Deliver in rolls do not fold

C Storage on Site (INSTALLER)

1 Store geocomposite rolls in the space allocated by the OWNER

2 Store geocomposite rolls to protect from puncture dirt grease water moisture mud mechanical abrasions excessive heat or other damage

3 Store geocomposite rolls on prepared surface (not on wooden pallets)

4 Stack geocomposite rolls as per the manufacturer s recommendation

D Handling on Site (INSTALLER)

1 Use appropriate handling equipment to load move and deploy geocomposite rolls Appropriate handling equipment includes cloth chokers and spreader bars for loading and spreader and roll bars for deployment Dragging panels on ground surface will not be permitted

2 Do not fold geocomposite folded material will be rejected

3 CONTRACTOR is responsible for off loading storage and transporting material from storage area to installation site

PART 2 PRODUCTS

2 1 MANUFACTURERS

A Submit substitutions in accordance with Section 01630 Product Options and Substitutions

2 2 GEOCOMPOSITE LABELING

A Provide the following information on geocomposite roll labels

1 Length width and weight

2 Name of MANUFACTURER and Fabricator

3 Directions for unrolling

4 Product identification lot number batch number and roll number

2 3 GEONET

A The resin shall be first quality High Density Polyethylene (HDPE) manufactured specifically for producing geonet for use in drainage systems Mixing of different resin types recycled materials or seconds will not be allowed

B The geonet shall meet the following requirements unless otherwise approved

TABLE 02773-1

GEONET PROPERTIES

Test	Test Designation	Requirement
Density(1)	ASTM D792 Method A or ASTM 1505	Minimum 0 932 g/cm^3
Carbon Black	ASTM D1603	2% to 3%
Tensile Strength	ASTM D5035	Minimum 45 lbs/in
Thickness	ASTM D5199	Minimum 200 mil
Notes (1) Measured on resin prior to addition of carbon black Maximum 0 965 g/cm^3 with carbon black		

2 4 GEOTEXTILE

A Geotextile used for filtration conforming to the following minimum average roll values (MARV) as defined by the Federal Highway Administration for the following properties listed

TABLE 02773-2

GEOTEXTILE PROPERTIES

Test	Test Designation	Requirement
Mass per Unit Area	ASTM D5261	6 oz/yd^2
Grab Tensile and Elongation	ASTM D4632	160 lbs and <50%
Puncture Resistance	ASTM D4833	85 lbs
Trapezoidal Tear	ASTM D4533	60lbs
Permittivity	ASTM D4491	1 3 sec ^{1}
Apparent Opening Size	ASTM D4751	>70 Sieve

2 5 GEOCOMPOSITE

A Geonet shall be heat bonded to two layers of geotextile one on each side

B No delamination (separation between the geonet and geotextile) greater than 6-squarefoot area within a 6-foot radius of any point shall be allowed

C Unlammated edge 12-inch MAXIMUM allowable

D The geocomposite shall meet the following requirements unless otherwise approved

TABLE 02774-3

GEOCOMPOSITE PROPERTIES

Test	Test Designation	Requirement	
Hydraulic Transmissivity	ASTM D4716	Long Term Design	N A
		Routine or Index(1)	≥5 x 10 ^{5} m^2/sec
Ply Adhesion	ASTM D7005	Minimum 0 5 lbs/in Average 1 0 lbs/in (1-minute test)	

Notes
(1) Geocomposite measured at a load of 12 000 psf and a gradient of 0 1 and sandwiched between two stainless steel plates with seating time of 15 hrs

2 6 MANUFACTURER SOURCE QUALITY CONTROL

A Perform the following quality control tests at the manufactunng plant or other laboratones on geonet geotextile and geocomposite products

TABLE 02773-4

MANUFACTURER'S QUALITY CONTROL TESTING REQUIREMENTS

Test	Test Designation	Frequency (see footnotes)
Geonet		
Density	ASTM D792 Method A or ASTM 1505	(2)
Carbon Black	ASTM D1603	(2)
Tensile Strength	ASTM D5035	(2)
Thickness	ASTM D5199	(2)
Geotextile		
Mass per Unit Area	ASTM D5261	(3)
Grab Tensile and Elongation	ASTM D4632	(3)
Puncture Resistance	ASTM D4833	(3)
Permittivity	ASTM D4491	(1)
Apparent Opening Size	ASTM D4751	(1)
Geocomposite		
Ply Adhesion	ASTM D7005	(2)
Hydraulic Transmissivity	ASTM D4716	(2)

Notes (1) One per 540 000 square feet produced or one per resin batch whichever results in the greatest number of tests
(2) One per 50 000 square feet produced or one per resin batch whichever results in the greatest number of tests
(3) One per 90 000 square feet produced or one per resin batch whichever results in the greatest number of tests

PART 3 EXECUTION

3 1 PREPARATION

A Installation shall be in accordance with the MANUFACTURER s instructions and these Specifications Where a conflict anses these Specifications will prevail

3 2 GEOCOMPOSITE INSTALLATION

A Deployment

1 Daily Panel Deployment Deploy no more panels in one shift than can be secured dunng that same shift

2 Do not damage geocomposite by handling by trafficking leakage of hydrocarbons or any other means

3 Unroll geocomposite panels using methods that will not damage stretch or crimp geocomposite Protect underlying surface from damage

4 Do not allow any vehicular traffic directly on geocomposite

5 Visually inspect geocomposite for imperfections Mark faulty or suspect areas for repair

B Connections (net) shall be overlapped a minimum of 6-inches along the length and one foot along the width

C Connections (net) shall be made using nylon ties secured at three-foot intervals along the length and 1-foot centers along the width

D Edge of geotextile shall be sewn or heat bonded for the entire length of geotextile No geonet shall be exposed

E Defects and Repairs

1 Examine areas of the geocomposite for defects holes blisters undispersed raw matenals and any sign of contamination by foreign matter The surface of the geocomposite must be clean at the time of the examination

2 Damaged geocomposite shall be removed and repaired according to Part 3 3 of this Section

3 3 REPAIR PROCEDURES

A Remove damaged geocomposite and replace with acceptable geocomposite materials if damage cannot be satisfactorily repaired

B Repair removal and replacement are at CONTRACTOR s expense if the damage results from the CONTRACTOR's INSTALLER s or the CONTRACTOR's subcontractor activities

C Repair any portion of the geocomposite exhibiting a flaw Agreement upon the appropnate repair method will be determined between the OWNER's Representative the CQAC and the INSTALLER Repair procedures available include

1 Patching Used to repair large holes tears by overlapping geocomposite 6-inches in all directions and tying

3 4 QUALITY CONTROL AND CONSTRUCTION QUALITY ASSURANCE

A MANUFACTURER Fabncator INSTALLER and CONTRACTOR will participate and conform with all terms and requirements of the OWNER s construction quality assurance program The CONTRACTOR is responsible for assunng this participation

B Field construction quality control and construction quality assurance (CQA) requirements shall be performed as specified m the CQA Plan

C The OWNER may perform additional testing to determine the conformance of the materials with these Specifications and the Construction Drawings

3 5 GEOCOMPOSITE ACCEPTANCE

A CONTRACTOR retains all ownership and responsibility for the geocomposite until acceptance by the OWNER

B OWNER will accept geocomposite installation when

1 All required documentation from the MANUFACTURER FABRICATOR and INSTALLER has been received and accepted

2 The installation is finished

END SECTION

SECTION 02778

GEOMEMBRANE

PART 1 GENERAL

1 1 SECTION INCLUDES

A Section includes furnishing and installing double-side textured HDPE geomembrane for the pond in accordance with the Specifications and the Drawings

1 2 RELATED SECTIONS

A Section 02221 — Excavating and Stockpiling

B Section 02222 — Engineered Fill and Anchor Trench Backfill

C Section 02776 —Geocomposite Vent Strip

1 3 REFERENCES

A GRI GM12 — Standard Specification for Aspenty Measurement of Textured Geomembranes using a Depth Gage

B ASTM D746 — Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact

C ASTM D792 — Standard Test Methods for Specific Gravity (Relative Density) and Density of Plastics by Displacement

D ASTM D1004 — Standard Test Method for Initial Tear Resistance of Plastic Film and Sheeting

E ASTM D1238 — Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer

F ASTM D1505 — Standard Test Method for Density of Plastics by the Density Gradient Technique

G ASTM D1603 — Standard Test Method for Carbon Black in Olefin Plastics

H ASTM D3895 — Standard Test Method for Copper Induced Oxidative Induction Time of Polyolefins by Thermal Analysis

I ASTM D4833 — Standard Test Method for Index Puncture of Geotextiles Geomembranes and Related Products

J ASTM D4873 — Standard Guide for Identification Storage and Handling of Geosynthetic Rolls and Samples

K ASTM D5199 — Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes

L ASTM D5397 — Standard Test Method for Evaluation of Stress Crack of Polyolefin Geomembranes Using Notched Constant Tensile Load Test

M ASTM D5596 — Standard Test Method for Microscopic Evaluation of Dispersion of Carbon Black in Polyolefin Geosynthetics

N ASTM D5885 — Standard Test Method for Oxidation Induction Time of Polyolefin Geosynthetics by High Pressure Differential Scanning Calorimetry

O ASTM D5994 — Standard Test Method for Measuring Core Thickness of Textured Geomembranes

P ASTM D6243 — Standard Test Method for Determining the Internal and Interface Shear Resistance of Geosynthetic Clay Liner by the Direct Shear Method

Q ASTM D6392 — Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods

R ASTM D6693 — Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes

1 4 DEFINITIONS

A Batch A quantity of resin usually the capacity of one rail car used in the manufacture of high density polyethylene (HDPE) geomembrane sheet A roll number corresponding to the particular lot of resin used will identify the finished sheet

B Bridging The condition when geomembrane becomes suspended over its subgrade due to contraction of the material or poor installation

C Construction Quality Assurance Consultant (CQAC) The party independent from MANUFACTURER or INSTALLER that is responsible for observing and documenting activities related to the quality assurance of production and installation of the geosynthetic components of the lining system

D Construction Quality Assurance (CQA) Laboratory The party independent from the OWNER MANUFACTURER Fabricator and INSTALLER responsible for conducting tests on samples of geosynthetics obtained at the site

E Construction Quality Assurance (CQA) Monitor The site representative of the CQAC

F Extrudate The molten polymer that is emitted from an extruder during seaming using either extrusion fillet or extrusion flat methods The polymer is initially in the form of a ribbon rod bead or pellets

G Fabricator The party responsible for the fabrication of geomembrane panels constructed from rolls received from the MANUFACTURER

H Geomembrane MANUFACTURER The party responsible for the production of the geomembrane rolls from resin and for the quality of the resin

I Geomembrane An essentially impermeable membrane used as a solid or liquid barrier Synonymous term for flexible membrane liner (FML)

J Geomembrane Subsurface The soil or geosynthetic surface on which the geomembrane lies

K INSTALLER The party responsible for field handling, transporting stoning deploying seaming, temporary restraining (against wind) and installation of the geomembrane

L Panel The unit area of geomembrane that will be seamed in the field A panel is identified as a roll or portion of a roll without any seams

1 5 PRE-CONSTRUCTION SUBMITTALS (MANUFACTURER AND INSTALLER)

A Submit the following to the OWNER 7 days prior to receiving material at site

B Resin Data (MANUFACTURER)

1 Statement of production date or dates

2 Certification stating that the resin meets the product requirements (see paragraph 2 2)

3 Certification stating that all resin is from the same MANUFACTURER

4 Copy of quality control certificates issued by MANUFACTURER

5 Test reports from MANUFACTURER

C Geomembrane Roll (MANUFACTURER)

1 Statement of production date or dates

2 Laboratory test results and certification stating that the geomembrane meets the product requirements (see paragraph 2 3), except for interface shear

3 Certification stating that all geomembrane rolls are furnished by one supplier and that all rolls are manufactured from one resin type obtained from one resin supplier

4 Copy of quality control certificates issued by MANUFACTURER

5 Test reports from the MANUFACTURER

6 Typical test results of complete notched constant tensile load test (ASTM D5397) for specified resin and sheet thickness

7 Statement certifying that no reclaimed polymer is added to the resin

8 Statement listing percentages of processing aids antioxidants and other additives other than carbon black added to or in the resin

9 Geomembrane delivery storage and handling instructions

10 Geomembrane installation instructions

11 Sample warranties for review

D Extrudate Beads and/or Rod (MANUFACTURER)

1 Statement of production date or dates

2 Laboratory certification stating that the extrudate meets the product requirements (see paragraph 2 4)

3 Certification stating that one MANUFACTURER manufactures all extrudate and one supplier supplies the resin

4 Copy of quality control certificates issued by MANUFACTURER

5 Test reports from the MANUFACTURER

6 Certification stating that the extrudate bead or rod resin is the same type from the same MANUFACTURER and compatible with the resin used to manufacture the geomembrane supplied for this project

E Schedules and drawings (INSTALLER)

1 Submit installation schedule one week prior to installation Include hours worked per day week and per shift Indicate all weather delays built into schedule

2 Installation layout drawings Two weeks prior to installation of geomembrane submit drawings showing the panel layout indicating both fabricated (if applicable) and field seams and details not conforming to the Drawings Upon acceptance use these drawings for installation of geomembrane

F Qualifications (INSTALLER)

1 Submit two weeks prior to installation name of INSTALLER and resume of installation supervisor/field ENGINEER to be assigned to the project

2 Submit two weeks prior to installation resume of master seamer

G Equipment and Personnel Submit the following two weeks prior to installation (INSTALLER)

1 Equipment list stating quantity and types

2 List of personnel to perform field seaming operations

1 6 SUBMITTALS DURING CONSTRUCTION (INSTALLER)

A Submit quality control documentation prepared during installation

B Submit daily prior to the start of installation subgrade acceptance certificate signed by the installation supervisor for each area to be covered by geosynthetics

1 7 SUBMIT UPON COMPLETION OF THE INSTALLATION (INSTALLER)

A Certificate stating the liner has been installed in accordance with the Drawings and Specifications

B The warranty obtained from the MANUFACTURER/Fabricator and the installation warranty

C As built drawings showing location of panels seams repairs patches and destructive samples including measurements

D Copies of seam test results and statistical analysis of each welder's performance

1 8 QUALIFICATIONS

A MANUFACTURER/Fabricator/Installation Firm

1 GSE Inc 19103 Gundle Road Houston Texas 77073 (800) 435 2008

2 Poly-Flex 2000 West Marshall Drive Grand Prairie Texas 75051 (888) 765-9359

3 AGRU/America Inc 600 Rockmead Suite 300 Kingwood Texas 77339 (800) 373-2478

B INSTALLER Must have successfully installed a minimum of 10 000 000 square feet of welded polyethylene geomembrane with documented references

C Master Welder Qualifications Must have completed a minimum of 5 000 000 square feet of polyethylene geomembrane seaming work using the type of seaming apparatus proposed for use on this project

D Other Seamer s Qualifications Must have seamed a minimum of 1 000 000 square feet of HDPE geomembrane

1 9 QUALITY ASSURANCE

A The OWNER will engage and pay for the services of (1) Construction Quality Assurance Consultant (CQAC) and (2) Construction Quality Assurance (CQA) Laboratory for monitoring the quality and installation of geomembrane material being installed unless otherwise specified

1 10 DELIVERY STORAGE AND HANDLING (MANUFACTURER)

A General Conform to the MANUFACTURER s requirements

B Delivery

1 Deliver materials to the site only after the OWNER accepts required submittals

2 Separate damaged rolls from undamaged rolls and store at locations designated by the OWNER until OWNER determines proper disposition of material

3 OWNER will determine the extent of damage to geomembrane

4 Deliver in rolls do not fold

C Storage on Site (INSTALLER)

1 Store geomembrane rolls in the space allocated by the OWNER

2 Store geomembrane rolls to protect from puncture dirt grease water moisture mud mechanical abrasions excessive heat or other damage

3 Store geomembrane rolls on prepared surface (not on wooden pallets)

4 Stack geomembrane no more than three rolls high

D Handling on Site (INSTALLER)

1 Use appropriate handling equipment to load move or deploy geomembrane rolls Appropriate handling equipment includes cloth chokers and spreader bar for loading spreader and roll bars for deployment Dragging panels on ground surface will not be permitted

2 Do not fold geomembrane material folded material will be rejected

3 CONTRACTOR is responsible for off loading storage and transporting material from storage area to installation site

1 11 WARRANTY (MANUFACTURER)

A Provide MANUFACTURER's warranty for geomembrane material in compliance with provisions of the Conditions of the Contract Provide a minimum 20 year pro rata warranty for the material against defeneration due to exposure to the elements either exposed or buried The warranty for material must cover costs of material replacement and installation assuming the area is rendered in a clean dry unencumbered condition In the event the area cannot be rendered as such compensation for defective material will be provided to the OWNER on a pro rata basis for the estimated cost to the OWNER at that time of supplying and installing material to a clean dry and unencumbered condition by a third party INSTALLER

B Installation Provide an installation warranty for geomembrane material in compliance with the conditions of the Contract Provide a minimum of 2 year non-pro rata warranty for the installation against defects

PART 2 PRODUCTS (MANUFACTURER)

2 1 PRE-APPROVED MANUFACTURER

A GSE Inc 19103 Gundle Road Houston Texas

B Poly-Flex 2000 West Marshall Drive Grand Prairie Texas 75051 (888) 765-9359

C AGRU/America Inc 600 Rockmead Suite 300 Kingwood Texas 77339 (800) 373-2478

2 2 GEOMEMBRANE RESIN

A High Density Polyethylene (HDPE) new first quality and manufactured specifically for producing HDPE geomembrane

B Do not mix resin types during manufacturing

C Do not use recycled materials or seconds in manufacturing

D Meeting the following requirements unless otherwise approved

TABLE 02778-1
HDPE RESIN PROPERTIES

TEST	TEST DESIGNATION	REQUIREMENT
Density(1)	ASTM D792 Method A or ASTM D1505	Greater than 0 932 g/cm^3
Notes (1) Measured on resin prior to addition of carbon black Maximum 0 950 g/cm^3 with carbon black		

2 3 DOUBLE-SIDE TEXTURED HIGH-DENSITY POLYETHYLENE (HDPE) GEOMEMBRANE

A Manufacturing

1 Do not exceed a combined maximum total of 1 percent by weight of additives other than carbon black or pigment Identify percentage of processing aids antioxidants and other additives other than carbon black

2 Do not exceed 3 5 percent by weight of finished geomembrane for total combined processing aids antioxidants carbon black and other additives

3 All additives for UV protection, thermal stability color or processing agents must not 'bloom' to the surface over time or inhibit welding

4 Use materials produced in the United States or Canada

5 Provide finished product free from blemishes holes pm holes bubbles blisters excessive gels undispersed resins and/or carbon black contamination by foreign matter and nicks or cuts on edges

6 Roll manufactured sheets or panel for shipment

7 Meeting the requirements of Table 02778-2 for double sided textured geomembrane unless otherwise approved

TABLE 02778-3

PROPERTIES FOR 60 MIL TEXTURED DOUBLE-SIDED HDPE GEOMEMBRANE

TEST	TEST DESIGNATION	REQUIREMENT
Sheet Thickness	ASTM D5994	Minimum average of 60 mils minus 5% (nominal) Lowest individual for 8 out of 10 values is 60 mils minus 10% Lowest individual for any of the 10 values is 60 mils minus 15%
Sheet Density	ASTM D792 Method A or ASTM D1505	0 940 to 0 950 g/cm^3
Oxidation Induction Time of Polyolefins[1]	ASTM D3895 200°C 1 atm or ASTM 5885	Minimum 100 minutes Minimum 400 minutes
Tensile Strength at Yield	ASTM D6693 Type IV 2 ipm	Minimum 130 lbs/in-width
Elongation at Yield	ASTM D6693 Type IV 2 ipm 1 3 in gage length	Minimum 12%
Elongation at Break	ASTM D6693 Type IV 2 ipm 2 0 in gage length	Minimum 150%
Tear Resistance	ASTM D1004 Die C	Minimum 42 lbs
Puncture Resistance	ASTM D4833	Minimum 108 lbs
Notched Constant Tensile Load Test[2]	ASTM D5397 Single Point	400 hours @ 30% of yield stress
Low Temperature Bnttleness	ASTM D746 Procedure B	Minus 100°F
UV Resistance-% Retained after 1600 hrs[3]	GRI-GM 11	Mm Avg 50% @1600 hrs
Carbon Black Content	ASTM D1603	2% to 3%
Carbon Black Dispersion	ASTM D5596	9 of 10 different views in Categories 1 or 2 and 1 of 10 in Category 3
Aspenty Height	GRI GM12	20 mils (8 of 10 readings ≥20 mils and lowest individual reading ≥ 16 mils)

Notes (1) The MANUFACTURER has the option to select either one of the OIT methods listed to evaluate the antioxidant content in the geomembrane

(2) The single point NCTL test is not appropnate for testing geomembranes with irregular rough surfaces The test should be conducted on smooth edge of textured rolls or on smooth sheets made from the same formulation as the textured matenal being evaluated

(3) UV resistance is based on percent retained value regardless of the onginal HP-OIT value

2 4 EXTRUDATE ROD OR BEAD

A Meeting the geomembrane MANUFACTURER requirements

B Made from same resm as the geomembrane

C Thoroughly disperse additives throughout rod or bead

D Containing 2 to 3 percent carbon black

E Free of contamination by moisture or foreign matter

2 5 WELDING EQUIPMENT FOR INSTALLATION

A Maintain sufficient operational seaming apparatus to continue work without delay

B Use power source capable of providing constant voltage under combined line load

C Provide protective lining and splash pad large enough to catch spilled fuel under electnc generator if located on liner

D Tensiometers capable of measunng seam strength calibrated and accurate within 2 pounds Tensiometers to be calibrated within 12 months of start of project

E Dies for cutting seam samples

2 6 MANUFACTURER SOURCE QUALITY CONTROL

A Perform the following quality control tests at the manufacturing plant on geomembrane products

TABLE 02778-4
MANUFACTURER'S QUALITY CONTROL TESTING REQUIREMENTS

TEST	TEST DESIGNATION	FREQUENCY (SEE FOOTNOTES)
Sheet Thickness	ASTM D5994	10 per roll
Sheet Density	ASTM D792 Method A or ASTM D1505	(a)
Oxidation Induction Time of Polyolefins	ASTM D3895 or D5885	(e)
Tensile Strength Yield	ASTM D6693 Type IV	(c)
Elongation at Yield	ASTM D6693 Type IV	(c)
Elongation at Break	ASTM D6693 Type IV	(c)
Tear Resistance	ASTM D1004 Die C	(c)
Puncture Resistance	ASTM D4833	(c)
Notched Constant Tensile Load Test (single point)	ASTM D5397 Single Point	(f)
Low Temperature Bnttleness	ASTM D746 Procedure B	(d)
UV Resistance	GRI-GM11	(g)
Carbon Black Content	ASTM D1603	(c)
Carbon Black Dispersion	ASTM D5596	(c)
Asperity Height	GRI GM12	10 per roll

NOTE * Contact OWNER for test sample location

(a) One per 100 000 square feet of sheet produced or one per resin batch whichever results in the greatest number of tests

(b) One test per project per material on typical sheet and seam Perform a tensile test (ASTM D6693) on a sample obtained from the same sheet and a test (ASTM D6392) on the seam

(c) One per 50 000 square feet or one per resin batch whichever results in the greater number of tests

(d) Certification only required

(e) One test per resm batch

(f) One test per resin batch at 30 percent of yield stress Minimum time to failure of 200 hours Each test perfonned with five samples all must pass Provide certification that material from the same formulation has been tested and exceeds 400 hours under the same conditions

(g) One test per fonnulation

PART 3 EXECUTION (INSTALLER)

3 1 EXAMINATION OF GEOMEMBRANE SUBSURFACE

A The liner subgrade shall be prepared as specified in Section 02223

3 2 PREPARATION

A Repair damage caused to the underlying materials during deployment

B Round edges of anchor trenches

3 3 PERFORM TRIAL SEAM WELDS AS FOLLOWS

A Perform trial welds on samples of geomembrane to verify the performance of welding equipment seaming methods and conditions

B No seaming equipment or welder will be allowed to perform production welds until equipment and welders have successfully completed trial weld

C Frequency of trial welds

1 Minimum of two trial welds per day per equipment and welder with one prior to the start of work and one at mid shift

2 When directed by the CQA Monitor

3 Every two hours when using a wedge weld to weld across seams

4 Minimum one trial weld per person per shift

5 When ambient temperature changes more than 20°F since previous trial weld

D Make trial welds in the same surroundings and environmental conditions as the production welds i e in contact with subgrade

E Make trial weld sample at least 2 feet long 3 feet long for double wedge welding machines and 12 inches wide with the seam centered lengthwise

F Cut two one inch wide test strips from opposite ends of the trial weld

G Quantitatively test specimens first for peel adhesion and then for bonded seam strength (shear) (ASTM D6392)

H A specimen is considered passing when the following results are achieved For double wedge welding both welds must pass in peel and shear

1 The break is a film tearing bond (FTB)

2 The break is ductile

3 The peel strength is a minimum of 70 percent of the specified sheet strength at yield for wedge welds or flat welds and a minimum of 60 percent of the specified sheet strength at yield for extrusion welds

4 There is no more than 10 percent separation of the weld For wedge welds the width of the weld must be equal to the width of the nip roller

5 The shear strength is 90 percent of the specified sheet strength at yield for all weld types When testing set grips back 2 inches from the edge of the weld Minimum elongation between the grips must be 2 inches

I A trial weld sample is considered passing when both specimens pass peel and shear tests

J Repeat the trial weld in its entirety when any of the trial weld samples fail in either peel or shear

K When repeated trial welds fail do not use welding apparatus and welder until deficiencies or conditions are corrected and two consecutive successful trial welds are achieved

3 4 DEPLOYMENT

A Give careful consideration to the timing and temperature during deployment The CQA organization will focus on verifying that (a) there is no bridging or stresses in the geomembrane and (b) there are no wrinkles in the geomembrane that will fold over when covering with soil material Ideally deployment welding and covering would all occur at the same temperature In a practical sense the CONTRACTOR should strive to perform these activities within as narrow a temperature range as practical and avoid these activities during peak hot or cold conditions

B Panel Identification Assign each panel an identifying code number or letter consistent with the CONTRACTOR's submitted panel layout drawing The coding is subject to approval by the CQA Monitor The installer is responsible to place the identification code on the installed liner which consists of panel number roll number and panel length

C Daily Panel Deployment Deploy no more panels in one shift than can be welded or secured during that same day

D Do not deploy in the presence of excessive moisture precipitation ponded water or high winds

E Do not damage geomembrane by handling by trafficking or leakage of hydrocarbons or any other means

F Do not wear damaging shoes or engage in activities that could damage the geomembrane

G Unroll geomembrane panels using methods that will not damage stretch or crimp geomembrane Protect underlying surface from damage

H Use methods that minimize wrinkles and differential wrinkles between adjacent panels

I Place ballast on geomembrane to prevent uplift from wind

J Use ballast that will not damage geomembrane

K Protect geomembrane in area of equipment or repeated foot traffic by placing protective cover that is compatible with and will not damage geomembrane

L Repair damage to subgrade or other underlying materials prior to completing deployment of geomembrane

M Do not allow any vehicular traffic directly on the underlying GCL without the expressed written consent of the ENGINEER

N Do not allow any vehicular traffic directly on unprotected geomembrane

O Remove wrinkled or folded material

P Visually inspect geomembrane for imperfections Mark faulty or suspect areas for repair

Q Install material to account for shrinkage and contraction while avoiding wrinkles Install material stress-free with no bridging before it is covered Add material as needed to avoid bridging

R Before wrinkles fold over attempt to push them out For wrinkles that cannot be pushed out cut them out and repair cuts prior to burial or at the direction of the OWNER

3 5 SEAM LAYOUT

A Orient seams parallel to line of maximum slope i e orient down not across slope

B Minimize number of field seams in corners odd shaped geometric locations and outside corners

C Keep horizontal seams (seams running approximately parallel to slope contours) at least 6 feet away from toe or crest of slope Unless approved by OWNER

D Use seam numbering system compatible with panel number system

E Shingle panels on all slopes and grades as directed by OWNER

3 6 SEAM WELDING PERSONNEL

A Provide at least one welder (master welder) who has experience welding over 5 million square feet of geomembrane using the same type of welding apparatus in use at site

B Qualify personnel performing welding operations by experience and by successfully passing field welding tests performed on site

C Master welder will provide direct supervision over other welders

3 7 SEAM WELDING EQUIPMENT

A Extrusion welder equipped with gauges showing temperatures in extruder apparatus and at nozzle External temperature gauges may measure temperature at nozzle

B Hot wedge welder Automated variable speed vehicular mounted devices equipped with devices adjusting and giving temperatures at wedge Pressure controlled by spring pneumatic or other system that allows for variation in sheet thickness Rigid frame fixed position equipment is not acceptable

C Maintain adequate quality of welding apparatus in order to avoid delaying the project

D Use power source capable of providing constant voltage under combined line load

3 8 GENERAL WELDING PROCEDURES

A Do not commence welding with welding equipment until trial weld test sample made by that equipment passes the test weld

B Clean surface of grease moisture dust dirt debris or other foreign material

C Overlap panels a minimum 3 inches for extrusion and 4 inches for hot wedge welding

D Do not use solvents or adhesives

E Provide adequate material on weld to allow peel testing of both sides of double wedge weld

F Extend welding to the outside edge of all panels

G If required provide a firm substrate by using a flat board a conveyor belt or similar hard surface directly under the weld overlap to achieve firm support

H Provide adequate illumination if welding operations are carried out at night

I Cut fishmouths or wrinkles along the ridge of the wrinkle in order to achieve a flap overlap Extrusion weld the cut fishmouths or wrinkles where the overlap is more than 3 inches When there is less than 3 inches overlap patch with an oval or round patch extending a minimum of 6 inches beyond the cut in all directions

3 9 INSTALLATION QUALITY CONTROL

A Log the following every two hours

1 Temperature directly on the geomembrane surface being welded

2 Extrudate temperatures in barrel and at nozzle (extrusion welder)

3 Operating temperature of hot wedge (hot wedge welder) and any pressure adjustments made

4 Preheat temperature

5 Speed of hot wedge welder in feet per minute

B Weld only when ambient temperature measured 6 inches above the geomembrane is between 32°F and 130°F

C If the INSTALLER wishes to use methods which may allow seaming at ambient temperatures below 32°F (0°C) or above 130°F (55°C) then the INSTALLER shall demonstrate and certify that such methods produce seams which are entirely equivalent to seams produced at ambient temperatures above 32°F (0°C) and below 130°F (55°C) and that the overall quality of the geomembrane is not adversely affected Then the temperatures in the above quality assurance procedure shall be modified accordingly

3 10 DEFECTS AND REPAIRS

A Examine all welds and non weld areas of the geomembrane for defects holes blisters undispersed raw materials and any sign of contamination by foreign matter The surface of the geomembrane shall be clean at the time of the examination

B Repair and non destructively test each suspect location both in weld and non weld areas Do not cover geomembrane at locations that have been repaired until test results with passing values are available

C Extrusion weld a patch over all cross or tee welds

3 11 EXTRUSION TYPE OF WELDING

A Use procedures to tack bond adjacent panels together that do not damage geomembrane and allow quality control tests to be performed

B Purge welding apparatus of heat degraded extrudate before welding

C Bevel top edges of geomembrane a minimum of 45° and full thickness of geomembrane before extrusion welding

D Clean seam welding surfaces of oxidation by disc grinder or equivalent not more than 30 minutes before extruding weld Change grinding discs frequently Do not use clogged discs

E Do not remove more than 4 mils of material when grinding

F Grind across not parallel to welds

G Cover entire width of grind area with extrudate

H When restarting welding grind ends of all welds that are more than five minutes old

3 12 HOT WEDGE WELDING

A Place smooth insulating plate or fabric beneath hot welding apparatus after usage

B Protect against moisture build up between panels

C If welding cross seams conduct field test welds at least every two hours otherwise once prior to start of work and once at mid day

D Bevel edges of top and bottom panels on cross seams

E Do not weld on geomembrane until equipment has passed final weld test

F Extrusion-weld a repair patch over all seam intersections as described in paragraph 3 10

3 13 FIELD QUALITY CONTROL AND QUALITY ASSURANCE

A MANUFACTURER Fabricator and INSTALLER will participate in and conform with all terms and requirements of the OWNERs quality assurance program The

CONTRACTOR is responsible for assuring this participation Quality control and quality assurance requirements are as specified in this paragraph

3 14 CONFORMANCE TESTING (PERFORMED BY CONSTRUCTION QUALITY ASSURANCE LABORATORY)

A Perform conformance testing on geomembrane rolls

B Allow 3 days for conformance testing following the date material is available to the CQA Laboratory

3 15 FIELD TESTING (PERFORMED BY INSTALLER)

A General Non-destructively test all field seams over their full length using a vacuum test unit air pressure (for double fusion seams only) spark testing or other approved methods Perform tesfing as the seaming progresses and not at the completion of all the field seaming Complete all required repairs in accordance with this specification

B Vacuum Testing Equipment

1 A vacuum box assembly consisting of a rigid housing a transparent viewing window a soft neoprene gasket attached to the bottom port hole or valve assembly and a vacuum gauge

2 A vacuum pump assembly equipped with a pressure control

3 A rubber pressure/vacuum hose with fittings and connections

4 A soapy solution and an applicator

C Vacuum Box Test Procedures

1 Place the box over the wetted seam area (soapy solution)

2 Ensure that a leak tight seal is created

3 Energize the vacuum pump and reduce the vacuum box pressure to a minimum of 10 inches of mercury i e five psi gauge

4 Examine the geomembrane through the viewing window for the presence of soap bubbles for a period of not less than ten seconds

5 All areas where soap bubbles appear shall be marked and repaired in accordance with repair procedures described in this specification

D Air pressure testing for seaming processes producing a double seam with an enclosed channel

1 Equipment compnsed of the following

a An air pump (manual or motor dnven) equipped with a pressure gauge capable of generating and sustaining a pressure over 40 psi and mounted on a cushion to protect the geomembrane

b A rubber hose with fittings and connections

c A sharp hollow needle or other approved pressure feed device

d A pressure gauge with an accuracy of plus or minus one psi

2 Test Procedures

a Seal both ends of the welded seam to be tested

b Insert needle or other approved pressure feed device into the tunnel created by the weld

c Energize the air pump to a minimum pressure of 30 psi or 1/2 psi per mil of liner thickness whichever is greater close valve and sustain pressure for at least five minutes

d If loss of pressure exceeds three psi (ten mm mercury) or otherwise approved or does not stabilize locate faulty area and repair in accordance with repair procedures described in this specification

e Puncture opposite end of seam to release air If blockage is present locate and test seam on both sides of blockage

f Remove needle or other approved pressure feed device and seal the penetration holes

E Spark Testing for penetrations or other difficult areas not accessible for vacuum testing

1 Equipment and Materials

a 24 gauge copper wire

b Low-amperage electric detector 20 000 to 30 000 volt with brush-type electrode capable of causing visible arc up to ¾ inch from copper wire

2 Procedures

a Place copper wire within 1/4 inch of the edge of extrusion seam or clamp seal

b Pass electrode over seam or clamp area and observe for spark If a spark is detected perform a repair

3 16 LABORATORY DESTRUCTIVE TESTING (PERFORMED BY OWNER AND THE INSTALLER)

A Location and Frequency of Testing

1 Collect destructive test samples at a minimum frequency of one test location per 500 feet of seam length

2 Determine test locations during welding Locations may be prompted by suspicion of excess crystallinity contamination offset welds or suspected

defect The OWNER will be responsible for choosing the locations The Monitor will not notify INSTALLER in advance of selecting locations where weld samples will be taken

3 The OWNER may increase the test frequency based on marginal results

B Sampling Procedures

1 Cut samples at locations designated by the OWNER as the welding progresses Verify that laboratory test results have been obtained before the geomembrane is covered by another material

2 The OWNER will number each sample and mark sample number and location in compliance with the CQA program

3 Immediately repair all holes in the geomembrane resulting from destructive test sampling Repair in accordance with repair procedures described in this Section Test the continuity of the repair in accordance with this Section

4 Size of Samples minimum 12 inches wide by 42 inches long with the seam centered lengthwise Cut a one-inch wide strip from each end of the sample and test these for (shear and peel) in the field Cut the remaining sample into three parts for distribution as follows

a One portion for the INSTALLER 12 inches by 12 inches

b One portion for Construction Quality Assurance Laboratory 12 inches by 18 inches

c One portion to the OWNER for archive storage minimum 12 inches by 12 inches

3 17 FIELD TESTING (PERFORMED BY INSTALLER)

A Test the two one-inch wide strips specified in paragraph 3 16 B by tensiometer for peel and shear respectively

B Both test strips must meet peel and shear requirements for welded seams specified in paragraph 3 3

C If any field test sample fails follow failed test procedures outlined in this Section

3 18 LABORATORY TESTING PERFORMED INDEPENDENTLY BY CONSTRUCTION QUALITY ASSURANCE (CQA) LABORATORY

A Test 'seam strength" and "peel adhesion (ASTM D6392)

B Minimum acceptable values to be obtained for these tests are specified in paragraph 3 3 H

C Test at least five specimens for each test method Five of five specimens must meet minimum requirements None of the peel specimens may peel 100 percent or the entire sample will be considered as failing

D Select specimens alternately by test from the samples (i e peel shear peel shear)

E Provide test results no more than 48 hours after receiving samples

F For double wedge welded samples test both sides in peel

3 19 FAILED WELD PROCEDURES

A Follow these procedures when there is a destructive test failure Procedures apply when test failure is determined by the Construction Quality Assurance Laboratory the INSTALLER or by field tensiometer Follow one of the following two options

1 First Option

a Reconstruct or cap strip the seam between any two passing test locations Cannot extrusion weld flap

2 Second Option

a Trace the weld at least 10 feet minimum in both directions from the location of the failed test or to the end of the weld

b Obtain a small sample at both locations for an additional field test

c If these additional test samples pass field tests then take laboratory samples

d If the laboratory samples pass then reconstruct the weld or cap between the two test sample locations that bracket the failed test location

e If any sample fails then repeat the process to establish the zone in which the weld must be reconstructed

3 20 ACCEPTABLE WELDED SEAMS

A Bracketed by two locations from which samples have passed destructive tests

B For reconstructed seams exceeding 50 feet a sample taken from within the reconstructed weld passes destructive testing

C Whenever a sample fails provide additional testing for seams that were welded by the same welder and welding apparatus or welded during the same time shift

3 21 SEAMS THAT CANNOT BE NON DESTRUCTIVELY TESTED PERFORM THE FOLLOWING

A If the weld is accessible to testing equipment prior to final installation non-destructively test the weld prior to final installation

B If the weld cannot be tested prior to final installation cap strip the weld The OWNER and the INSTALLER must observe the welding and cap stripping operations for uniformity and completeness

3 22 REPAIR PROCEDURES

A Remove damaged geomembrane and replace with acceptable geomembrane materials if damage cannot be satisfactonly repaired

B Repair removal, and replacement are at CONTRACTOR s expense if the damage results from the CONTRACTOR's, the INSTALLER's or the CONTRACTOR's SUBCONTRACTOR activities

C Repair any portion of the geomembrane exhibiting a flaw or failing a destructive or non-destructive test Agreement upon the appropnate repair method will be determined between the OWNER S Representative and the INSTALLER Do not commence welding on liner until tnal weld test sample made by that equipment and operator passes trial test Repair procedures available mclude

1 Patching Used to repair large holes (over 3/8 inch diameter) tears (over 2 inches long) undispersed raw matenals contamination by foreign matter and to cover cross and tee connections

2 Abrading and re-welding Used to repair small sections of seams

3 Spot welding or seaming Used to repair small tears (less than 2 inches long) pm holes or other minor localized flaws

4 Capping Used to repair large lengths of failed seams

5 Removing the seam and replacing with a stnp of new matenal

D In addition satisfy the following procedures

1 Abrade geomembrane surfaces to be repaired (extrusion welds only) no more than one (1) hour prior to the repair

2 Clean and dry all surfaces at the time of repair

3 The OWNER s representative the CQAC and the INSTALLER must accept the repair procedures matenals and techniques in advance of the specitic repair

4 Extend patches or caps at least 6 inches beyond the edge of the defect and round all corners of matenal to be patched and the patches to a radius of at least 3 inches

5 Unless otherwise instructed by the OWNER cut geomembrane below large caps to avoid water or gas collection between the sheets

E Verification of repair

1 Number and log each patch repair

2 Non-destructively test each repair using methods specified in paragraph 3 15 of this Section

3 Destructive tests may be required at the discretion of the OWNER s Representative

4 Reconstruct repairs until tests indicate passing results

3 23 GEOMEMBRANE ACCEPTANCE

A CONTRACTOR retains all ownership and responsibility for the geomembrane until acceptance by the OWNER

B OWNER will accept geomembrane installation when

1 All required documentation from the MANUFACTURER Fabricator, and INSTALLER has been received and accepted

2 The installation is finished

3 Test reports verifying completion of all field seams and repairs including associated testing is in accord with the Section

4 The OWNER has received written certification documents and drawings

END OF SECTION

Ausenco Vector

Appendix C – CQA Plan

Ausenco Vector

Environment & Sustainability

Wasatch Regional Landfill, Inc.

Wasatch Regional Landfill Liquid Waste Pond Construction Quality Assurance June 2, 2010

Ausenco Vector

Contents

Ausenco Vector

Ausenco Vector

1 Construction Quality Assurance / Quality Control

1 1 Introduction and Scope

This plan describes the liner system constmction quality assurance quality control (CQA/QC) requirements for the Liquid Waste Pond at the Wasatch Regional Landfill CQA/QC refers to the duties of a third party CQA/QC Consultant hired by the Owner and the QC representatives of the contractor to monitor inspect and evaluate matenals and workmanship dunng constmcfion The CQA/QC activities document the compliance of the Contractor with the Drawings and Specifications for the constmcfion which have been approved by Utah Division of Solid and Hazardous Waste (UDSHW) For the purposes of this constmcfion project and consistency with the Specifications the following references shall refer to the people or groups as listed below

- Owner or Company refers to Wasatch Regional Landfill inc (WRL)
- Owner's representative refers to either employees of (WRL) or persons hired by the Owner to act as his representative dunng the construction project
- CQA/CQC Consultant refers to an independent third party firm hired by the Owner to perform CQA/CQC dunng the constmction project
- CQA/CQC Officer refers to the licensed professional ultimately responsible for the CQA/CQC activities
- CQA/CQC Monitor refers the person or persons responsible for monitonng and documenting the day to day CQA activities
- Engineer refers to the person or company responsible for the construction plans and specificafions
- Contractor refers to the company hired by the Owner to perform the construction activities
- Geosynthetics Installer refers to the firm hired by the Owner to install the geosynthefic material

The overall goal of this CQA/QC Plan is to assure that proper construction techniques and procedures are used and that the project is built in accordance with the project Drawings and Specifications The intent is to identify and define problems that may occur dunng construction and to venfy that these problems are corrected before construction is complete A wntten final report prepared by the CQA/QC Consultant will be prepared summanzing the construction activities and venfying that the installation was performed in general accordance with the project Drawings and Specifications

All quality assurance activifies shall be conducted in accordance with this Plan and with the Drawings and Specifications Where there is a discrepancy the Specifications shall govern unless otherwise specified by the Company and approved by UDSHW The CQA/QC Monitor shall observe all field installation activities The CQA/QC Consultant shall be responsible for ensunng that the proper number of personnel are site and capable of observing constmcfion activities as descnbed in this document The CQA/CQC Monitor shall be present dunng all phases of construction that require CQA/CQC observation Documentation shall meet the requirements of this Plan and the Specificafions

1 2 Duties of CQA/QC Personnel

It is the duty and responsibility of the CQA/QC Consultant to implement the elements of this CQA/QC Plan in order to ensure that the construction and installation of the composite liner system at the site is performed in accordance with the approved Constmcfion Drawings and Specificafions Utah Regulafions and 40 CFR 258 (Subfitle D) The CQA/QC personnel shall make every effort to communicate in an efficient and effective manner to the Contractor s representatives on issues concerning tesfing and observation procedures and results of matenals or in situ tests performed

The CQA/QC Consultant is not in a position to direct construction activities but is encouraged to give advice to the Contractor its employees or the Company on items which may improve the quality or speed progress of the construction As described previously for the purposes of consistency with the Specifications the Company may also be referred to as the Owner

The CQA/QC Consultant and its representatives shall make every effort to furnish test results to the Contractor m a prompt manner Test results shall be signed by both the CQA/CQC Consultant and the contractor and made available to UDSHW by the end of the second working day after completion of the test The representatives of the CQA/QC Consultant shall report to the Company any non-conformance items which cannot be resolved promptly

The CQA/QC monitor will be on site at all times during the construction project to ensure that all aspects of construction are monitored and documented

1 3 Personnel Qualifications

1 3 1 CQA/QC Officer

The CQA/QC Officer will have formal academic training in civil engineering or a closely related discipline and will be a registered civil engineer in the State of Utah The CQA/QC Officer will have experience in earthworks construction landfill/containment pond design and construction and geomembrane and leachate collection system installations The CQA/QC Officer will have practical technical and managenal experience that will allow the CQA/QC Plan to be properly implemented The CQA/QC Officer must be able to communicate effectively with the Company personnel and the Contractor so that there will be a clear understanding of construction activities and the CQA/QC Plan

1 3 2 CQA/QC Monitor

The CQA/QC Monitors will have formal training and practical experience in inspecting and testing earthworks construction geomembrane installations and leachate collection system installations including conducting and recording inspection activities preparing daily reports and performing field testing In addition knowledge shall be required of the specific field practices and construction techniques for landfill/pond liner construction and all codes and regulations involving material handling observation of testing procedures equipment and reporting procedures

2 Meetings

2 1 General

Throughout the entire construction and installation of the system close communication between all parties involved with the project is essential In order to coordinate activities between the Company CQA/QC Consultant and Contractor as well as set up proper lines of authority and reporting meetings shall be held before and during construction The type and purpose of meetings to be held for this project are described in this section

2 2 Preconstruction Meeting

A preconstruction meeting shall be held prior to project start-up The parties that shall attend this meeting are the Company Contractor and CQA/QC Consultant The Company will notify UDSHW of the preconstruction meeting although regulatory attendance is not mandatory The purpose of this meeting is to

- Review the project Drawings and Specifications
- Review project tasks and responsibilities
- Review project schedule
- Review lines of communication and authority

- Review reporting and documenting procedures
- Review testing equipment and test methods
- Review protocol for submittal of CQA/QC conformance testing data sheets
- Conduct a site mspection to review work areas lay down areas stockpile areas access roads and related project issues

The CQA/QC Consultant shall document the preconstruction meeting and copies shall be provided to all persons present at the meeting and UDSHW Preconstruction meeting documentation shall become part of the project documents

2 3 Daily Progress Report

A progress meeting shall be held before the start of each construction shift The daily progress meetings shall be attended by the CQA/QC Monitor and the Contractor The purpose of this meeting shall be to

- Review the proposed activities scheduled by the Contractor for the day
- Discuss any problems or deficiencies that have ansen dunng construction
- Review the results of any test data
- Discuss the Contractor's deployment of personnel and equipment
- Review the previous day s activities mcluding the effectiveness of procedures taken to alleviate any deficiencies

All progress meetings shall be documented by the CQA/QC Monitor on his daily field construction inspection report

2 4 Weekly Progress Meetings

Progress meeting will be held at the beginning or end of each week to review the previous week s activities or progress discuss present and future work and discuss any current or potential construction problems At a minimum the CQA/QC Monitor a Company representative the Contractor and all active subcontractors shall attend If necessary the CQA/QC Officer shall also attend The Company will notify UDSHW of the progress meetings although regulatory attendance is not mandatory All weekly progress meetings will be documented by the CQA/QC Monitor who will transmit minutes by the end of the second working day to all parties including UDSHW

2 5 Work Deficiency Meetings

As needed meetings shall be held to discuss specific problems or deficiencies that occur dunng construction that cannot be easily resolved Work deficiency meetings shall be attended by the CQA/QC Monitor CQA/QC Officer the Company and the Contractor The Company will notify UDSHW of any work deficiency meetings although regulatory attendance is not mandatory The purpose of these meetings is to

- Identify the nature and extent of the problem
- Discuss the means necessary to correct the deficiency or problem and
- Provide a solution to the problem and determine how the corrective action shall be implemented

3 Design Changes

3 1 Minor Design Changes

Minor changes to the Plans and Specifications may be necessary to maintain or enhance quality during the project or to make adjustments to unforeseen field conditions Minor changes must be approved by the Engineer Procedures for providing minor changes include the following

- The need for a design change may become apparent during the course of construction of the project and a request for a change may be initiated by any individual associated with the project
- All proposed design changes must be approved by the Engineer and submitted to the CQA/CQC Officer with necessary documentation supporting the change for approval All design changes must meet the intended quality and technical requirements of the design
- Approved changes will be distributed to the Owner CQA/CQC Monitor CQA/CQC Officer Contractor Geosynthetics Installer and the UDSHW
- Minor changes will not apply for changes that decrease the environmental protection of the unit such as decreasing the number or thickness of liners decreasing the number of sumps changing the synthetic liner materials etc

3 2 Major Design Changes

Major changes to the plans and specifications are unlikely to occur but may become necessary during the course of construction Major changes may include elimination of waste pond design components and drainage features and addition or changes to liner components and the extent of liner installation The following procedures will be implemented for all major changes

- A special meeting will be scheduled immediately with the UDSHW to discuss the need for the change
- Owner and Engineer will both attend the meeting to present the basis for the change Requested changes and supporting documentation will be provided at the meeting
- Major changes will not be implemented without the express written approval from the UDSHW
- Copies of approved changes will be distributed to Owner Engineer CQA/CQC Monitor CQA/CQC Officer Contractor Geosynthetics Installer and UDSHW

4 Earthworks

4 1 General

This section outlines the requirements for earthwork operations for the construction of the Liquid Waste Pond The Contractor shall excavate soils construct perimeter berms and prepare the liner subgrade as necessary to achieve the grades set forth within the Drawings and Specifications Earthwork includes but is not limited to (1) excavation/stockpiling (2) engineered fill placement (3) preparation of liner subgrade (4) excavation and backfill of the geosynthetic anchor trenches and (5) leak detection system installation Specifically excluded from this section are the geomembrane installation geocomposite vent strip placement and geotextile placement which are addressed within Sections 5 6 and 7 of this CQA/QC Plan The CQA/QC Monitor shall verify that the Contractor has conducted all surveying and as-built drawing preparation as required by the Specifications

4 2 Excavation / Stockpiling

The excavated materials shall be stockpiled in a location as directed by the CQA/QC Monitor or Company Representative The Monitor shall observe that the stockpiles conform to the requirements of the Specifications

4 3 Engineered Fill Placement

The CQA/QC Monitor shall verify that the perimeter berms and other engineered fills are placed to the approximate lines and grades shown on the Drawings

The CQA/QC Monitor shall observe the placement of engineered fill material in loose lifts not exceeding the thickness stated in the Specifications The relative compaction of each lift may be tested for nuclear density and moisture in accordance with ASTM D 2922 and ASTM D 2216 The maximum density of the soils may be tested per ASTM D 698 in accordance with the Drawings and Specifications Sand cone testing shall be conducted as a check to the nuclear density testing in accordance with ASTM D 1556 The testing frequency requirements of the engineered fill are include in Table 1 Results of all field testing shall be provided to the regulating agency within two days of test completion

Table 1 Engineered Fill Testing Frequency

Test Description	Frequency
Moisture Density D 698	One per material type
Particle Size D422 or C136	One per material type
Nuclear Density and Moisture D2922/D3017	One per 1 000 cy
Moisture Content D2216	One per 10 000 cy
Sand Cone D-1556	One per 20 000 cy
Note These testing frequencies may be increased at the discretion of Engineer	

4 4 Liner System Foundation

The foundation proof-rolling smooth drum compaction and other preparation activities shall be observed by the CQA/QC Monitor as required by the Specifications and this Plan The completed foundation for the Geomembrane liner shall be inspected by the CQA/QC Monitor Contractor and Geosynthetics Installer (Installer) to ensure that it will provide a firm and relatively smooth base for construction of the lining system in accordance with the Drawings and Specifications Any areas observed to be excessively soft during proof rolling should be excavated and reworked or removed and suitable materials placed by the Contractor in accordance with the project Specifications If replacement fill is thicker than 6 inches fill shall be treated as engineered fill and tested accordingly At the conclusion of the foundation preparation the CQA/QC Monitor shall record on an appropriate form that the subgrade is acceptable to the Installer for placement of the overlying geosynthetic materials

4 5 Anchor Trench Excavation and Backfilling

The CQA/QC Monitor shall verify that the anchor trenches are excavated to the approximate lines and grades shown on the Drawings The CQA/QC Monitor shall observe trench excavation to ensure it has been excavated only the distance required to carry out the synthetic liner installation in an expeditious manner The CQA/QC Monitor shall verify that the leading edges of the anchor trenches are rounded to minimize sharp bends in the liner material

The CQA/QC Monitor shall observe the backfill compaction and placement of soil in lifts to ensure that the work is performed in accordance with the Drawings and Specifications The CQA/QC Monitor shall observe that the placement and compaction techniques employed by the Contractor to ensure that any damage (if it occurs) to the liner is recorded and repaired as necessary Any

damage to the synthetic materials shall be immediately repaired in accordance with this Plan and the Specifications The Contractor shall be responsible for reworking and recompacting any areas that do not appear to be compacted properly as determined by the CQA/QC Monitor

4 6 Leak Detection System

4 6 1 General

This section sets forth the requirements for the CQA/QC testing and observation requirements for installing the Leak Detection components detailed on the Construction Drawings and Specifications This work includes the materials for the leak detection sump construction and collection pipe installation (more specifically leak detection gravel layer and piping) Geotextile wrap CQA procedures are included in Section 9 of this CQA plan The Contractor shall furnish submittals in compliance with this plan and conditions of warranty prior to construction for review by the CQA/QC Officer and CQA/QC Monitor The Contractor shall also prepare and submit a time schedule for installation including complete testing and acceptance of materials prior to construction

4 6 2 Leak Detection Piping

The Contractor shall provide a copy of the piping manufacture s data for this project prior to construction for review by the CQA/QC Monitor and CQA/QC Officer Materials shall be delivered to the site only after the CQA/QC Monitor receives and approves the required submittals

The CQA/QC Monitor shall ensure that the materials were packaged and shipped by appropriate means so that no damage was caused to the materials delivered to the site Off-loading shall be done in the presence of the CQA/QC Monitor and any damage during off-loading shall be documented by the CQA/QC Monitor and the Contractor The CQA/QC Monitor shall keep a log of all piping delivered to the site on a log of piping received form

Damaged materials shall be separated from undamaged materials until the CQA/QC Monitor determines proper disposition of the material Final authority on the determination of damage shall be the CQA/QC Monitor The Contractor shall replace damaged or unacceptable material at no cost to the Owner

The piping shall be stored on a prepared surface approved by the CQA/QC Monitor and shall be protected from puncture precipitation dirt grease water mechanical abrasions or other damage The CQA/QC Monitor shall observe that the Contractor uses appropriate handling equipment to load move or deploy the material to ensure that no damage is caused to the materials during handling of the piping

No leak detection piping shall be placed until the synthetic liner has been installed and approved by the CQA/QC Monitor The CQA/QC Monitor shall observe placement to ensure that no materials are placed in a manner that could damage the underlying geomembrane liner The CQA/QC Monitor shall record all observed damages and clearly mark their location for scheduled repair

4 6 3 Leak Detection Gravel

The Contractor shall provide samples of the leak detection gravel material to the CQA/QC Monitor for conformance testing As described in the Specifications this conformance testing shall include but may not be limited to sieve analysis (ASTM D-422) and permeability (ASTM D-2434) Conformance testing shall be performed at a frequency of one test per 500 cubic yards of delivered material or one per source whichever results in the greater number of tests

No leak detection gravel material shall be placed until the synthetic liner and leak detection pipes have been installed and approved by the CQA/QC Monitor The CQA/QC Monitor shall observe placement so that no materials are placed over wrinkles in the underlying geosynthetic liner materials and to ensure that the leak detection piping is not damaged The Contractor shall schedule placement of the leak detection gravel material during cooler parts of the day in the

event of warm weather in order to avoid placement of drainage materials when the liner is wrinkled The CQA/QC Monitor shall record all observed damages and clearly mark their location for scheduled repair

5 Geomembrane Quality Assurance

5 1 General

This section sets forth the requirements for the CQA/QC testing and observation requirements for installing the geomembrane materials detailed on the Drawings and Specifications This work includes the manufacturer s QC testing conformance testing shipping and handling deployment seaming repairs and non-destructive and destructive testing of the geomembrane liner The Contractor shall furnish submittals in compliance with this Plan and conditions of warranty prior to construction for review by the CQA/QC Officer and CQA/QC Monitor

5 2 Shipping and Handling

The Contractor shall provide a copy of the QC certificates for production of each geomembrane roll manufactured for this project prior to constmction for review by the CQA/QC Monitor and CQA/QC Officer The certificate of compliance for the geomembrane must be received prior to installation as required by the Specifications Materials shall be delivered to the site only after the CQA/QC Consultant receives and approves the required submittals

The Contractor is responsible for the transportation off-loading and storage of the geomembrane The materials shall be packaged and shipped by appropriate means so that no damage is caused and shall be delivered to the site only after the CQA/QC Monitor receives and approves the required submittals Off loading shall be performed in the presence of the CQA/QC Monitor and any damage during off loading shall be documented by him The CQA/QC Monitor shall keep a log of all geomembrane delivered to the site on the appropriate form for review by the CQA/QC Officer

Damaged materials shall be separated from undamaged materials until the CQA/QC Monitor and CQA/QC Officer determine proper disposition of the material Final authority on the determination of damage shall be the CQA/QC Monitor The Contractor shall replace damaged or unacceptable material at no cost to the Company

5 3 Geomembrane Conformance Testing

After delivery or at the point of manufacture the CQA/QC Monitor shall obtain one geomembrane sample per 100 000 square feet delivered for conformance testing The CQA/QC Monitor shall identify the roll numbers of the geomembrane which are tested for conformance on the log of geomembrane received form The samples shall be delivered to the third party geosynthetics laboratory to determine that the geomembrane properties conform to the requirements given in the Specifications The CQA/QC Monitor shall review all test results and report any non-conformance test results to the Contractor and the CQA/QC Officer Third party geosynthetics testing shall be performed by a qualified laboratory Results of all geomembrane conformance testing shall be provided to the regulating agency within two days of receiving test results

The CQA/QC Monitor shall collect samples for conformance testmg across the entire width of the roll This conformance sample shall not include the first three feet of the roll

The conformance samples shall be three feet wide by the roll width in length The CQA/QC Monitor shall mark on each roll the manufacturer s name product identification lot number roll number and roll dimensions The Contractor shall provide the personnel and equipment to obtain the sample in the presence of the CQA/QC Monitor No material shall be deployed until the CQA/QC Monitor receives passing conformance values and approves the liner for installation

The conformance testing shall include the following parameters

- Thickness (ASTM D-5994)
- Sheet Density (ASTM D-792 or ASTM D-1505)
- Tensile Properties (ASTM D-6693)
- Carbon Black (ASTM D-1603)
- Carbon Dispersion (ASTM D-5596) and
- Asperity Height (GRI GM12)

5 4 Geomembrane Placement

5 4 1 Subgrade Surface Preparation

Prior to geomembrane installation the CQA/QC Monitor shall verify that the following subgrade surface preparation activities are performed prior to placement of the geomembrane

- The Contractor has completed the required surveying of all lines and grades by a qualified surveyor
- The subgrade has been graded and rolled in accordance with the Documents Specifications and CQA/QC Plan
- The Contractor has verified in writing that the subgrade is acceptable for geomembrane installation
- The supporting surface does not contain rocks other protrusions or debris which could damage the geomembrane
- No excessively soft areas or depressions which could damage the geomembrane are present and
- All construction stakes and hubs have been removed

5 4 2 Geomembrane Panel Placement

Prior to placing the geomembrane panels the Contractor and CQA/QC Monitor shall observe and verify that the subgrade has been properly prepared and accepted Once the subgrade has been approved deployment of the geomembrane may begin The Contractor s QC Technician shall give each panel an identification number that shall be used by all parties The CQA/QC Monitor shall record the placement of each panel on a geomembrane panel deployment log form to be reviewed by the CQA/QC Officer The CQA/QC Monitor shall observe that the Contractor has provided sufficient slack in the geomembrane to allow for contraction due to cold temperatures The CQA/QC Monitor shall record the ambient temperatures during seaming operations As the geomembrane panels are deployed in the field the CQA/QC Monitor shall observe and verify the following

- That there are no significant defects present in the sheet Small defects shall be marked along with the type of repair required (extrudate patch etc)
- That the sheet is not deployed under adverse weather conditions such as fog rain or high winds
- That the equipment and deployment methods do not cause excessive wrinkling of the geomembrane and that the sheet is not dragged along a rough surface If the liner is dragged the CQA/QC Monitor shall inspect the underside of the material for damage
- That personnel do not engage in activities that could damage the geomembrane
- That the Contractor's QC personnel properly record identification information including roll number panel number seam number date etc

The CQA/QC Monitor shall record all of the above information in daily reports and log sheets and shall inform all parties of any deviations

5 5 Geomembrane Test Welds

The Contractor shall conduct field test welds on pieces of scrap liner prior to production welding The CQA/QC Monitor shall verify that the Contractor conducts test welds in accordance with the Specifications

The CQA/QC Monitor shall record the shear and peel test results for the test weld coupons on a geomembrane start up tnal weld log form The Contractor shall not begin welding of field seams unless the CQA/QC Monitor has verified that the tnal welds are acceptable Once a welding technician has been approved on a specific welding apparatus he may not change machines without first passing a test weld on the new equipment

5 6 Seaming of the Geomembrane

The CQA/QC Monitor shall verify that the geomembrane is seamed between the ambient temperatures descnbed within the Specifications The CQA/QC Monitor shall measure and record the temperature m accordance with the Specificafions

The CQA/QC Monitor shall verify that the geomembrane is not being deployed dunng precipitation in the presence of excessive moisture in areas of ponded water or in the presence of excessive winds

The Contractor's QC Technician and the CQA/QC Monitor shall venfy that geomembrane seams are onented parallel to the maximum slope direcfion and that a seam numbenng system compatible with the panel numbenng system is used The CQA/QC Monitor shall verify that the Contractor has taken the following steps prior to seaming the geomembrane

- That the liner surface has been cleaned of all foreign matenal including dirt dust debns moisture or oil
- That gnnding has been performed to remove the oxidafion (extrusion welds only)
- That all areas where the sheet thickness has been thinned below the specified value from gnnding are patched by the Contractor
- That any bead grooves are covered with single extrudate
- That wnnkles and fishmouths are cut out and the edges overlapped properly
- That all seaming takes place over a firm dry surface
- That when the ambient temperature is below the prescribed temperature a hot air device is used for preheafing in front of the welder
- That the approved type and quantity of welding devices are used on the job
- That extrusion welders are purged of heat degraded matenal prior to use
- That for cross or tee seams the edge of the seam is ground to a smooth incline
- That the seam numbenng system and welding procedures agreed upon at the preconstruction meeting are stnctly followed

The CQA/QC Monitor shall record the above informafion in his daily reports along with panel placement and seaming log forms to be reviewed by the CQA/QC Officer

5 7 Extrusion Welding

For extrusion welding the CQA/QC Monitor shall observe that the welding devices are purged of heat-degraded extrudate as descnbed in the Specifications All purged extrudate shall be disposed of off the liner Each extruder shoe shall be inspected daily for wear to assure that its offset is equal to the liner thickness All worn or damaged shoes or other parts shall be repaired The CQA/QC Monitor shall verify that no equipment is allowed to begin welding until the test weld made by that equipment passes the weld test All test weld results shall be reviewed and recorded by the CQA/QC Monitor

5 8 Hot Wedge (Fusion) Welding

For hot wedge (fusion) welding the CQA/QC Monitor shall venfy that the welding devices are automated vehicular mounted and equipped with gauges giving applicable speed temperatures and pressures The speed temperature and pressure of the welding device should be determined dunng the test welding conducted pnor to seaming of the panels If welding cross seams field test welds shall be conducted at least every 2 hours or as described in the Specifications

5 9 Non-destructive Testing of Geomembrane Seams

Prior to the start of construcfion the Contractor shall submit to the CQA/QC Officer for approval as per the specifications a procedure for non-destructive testing of all field seams When the seaming begins in the field the CQA/QC Monitor shall record the results of the geomembrane QC conducted by the Contractor on a geomembrane installer's field QC log form

5 10 Vacuum Box Testing

For non-destructive seam tesfing all extrusion welded field seams shall be tested over their full length using vacuum box test units The vacuum testing shall be performed by the Contractor's QC Technician under the observafion of the CQA/QC Monitor The CQA/QC monitor does not need to observe each vacuum box test but shall check penodically on the methods and equipment used and record all results The CQA/QC Monitor shall venfy that the tests are conducted concurrently with the field seaming and that the vacuum box assembly consists of a ngid box with a transparent viewing window and a vacuum gauge The CQA/QC Monitor shall verify that the Contractor's procedure for vacuum testing is as follows

- Clean window gasket surfaces and check box for leaks
- Energize vacuum pump and set to the proper pressure as required by the Specifications
- Place soapy solution on section of seam to be tested
- Place box over wetted area and press down
- Close bleed valve open vacuum valve and ensure that a leak fight seal is created
- Examine the length of weld through the viewing window for bubbles for the penod descnbed in the Specificafions
- If no bubbles appear the vacuum valve should be closed the bleed valve opened and the box should be moved to the next adjoining area with the specified overlap
- Areas where soap bubbles are detected shall be marked repaired and retested

5 11 Air Pressure Testing

If the double hot wedge seaming system is employed air pressure testing shall be used The CQA/QC Monitor shall observe that air pressure testing is conducted by the Contractor as follows

- Seal both ends of the seam to be tested
- Insert a hollow needle or other approved pressure feed device into the tunnel created by the double hot wedge and insert a protective cushion between the air pump and geomembrane
- Energize the air pump to the pressure specified close the valve and sustain the pressure for the specified time penod
- Check the entire seam being tested for indications that it has been fully pressurized This shall be accomplished by opening the air channel at the opposite end of the seam and observing a loss of pressure
- If a loss of pressure exceeds the specified value or does not stabilize locate the faulty area and repair
- Remove the approved pressure feed device and seal

At a minimum the openmg of the air channel of each seam shall be observed by the CQA/CQC Monitor Should a loss of pressure be detected along a seam the faulty area shall be identified repaired and re-tested as provided within the Specifications

If blockage occurs along the seam the area shall also be identified repaired and re tested The Contractor shall be responsible for all costs associated with the seam repair The results of both vacuum box and air pressure testing shall be recorded on the seam and panel QC form by the CQA/QC Monitor for review by the CQA/QC Officer

5 12 Destructive Testing of Geomembrane Seams

The CQA/QC Monitor shall determine the location of all destructive tests The CQA/QC Monitor shall obtain a minimum of one sample per 500 feet of seam The Contractor shall repair any suspicious looking welds before release of a seam for destructive sampling Destructive samples shall be cut by the Contractor as the installation progresses and not at the completion of the project The Contractor's QC Technician shall mark all destructive samples with consecutive numbers along with the seam number The CQA/QC Monitor shall keep a log with the date fime location seaming technician apparatus temperature and pass or fail cntena The CQA/QC Monitor shall verify that all destrucfive sample holes are repaired immediately by the Contractor

The Contractor's QC Technician shall cut destructive samples at locations selected by the CQA/QC Monitor The CQA/QC Monitor shall

- Mark each sample with the seam number and the adjoining panel numbers
- Record the sample location on the geomembrane panel deployment log form and the geomembrane field seaming log form
- Record the sample locafion and reason for taking the sample (random sample poor welding etc)

5 13 Repairs to the Geomembrane

For final seaming inspection the CQA/QC Monitor and Contractor shall check the seams and surface of the geomembrane for defects holes blisters undispersed raw matenals or signs of contamination by foreign matter If dirt inhibits inspections the Contractor shall brush blow or wash the geomembrane surface as required The CQA/QC Monitor shall decide if cleaning the geomembrane surface and welds is needed to facilitate inspecfion Repair areas shall be distinctively marked with a descnption of the required type of repair

The CQA/QC Monitor shall venfy that all identified holes tears blisters undispersed raw materials and contamination by foreign matter are patched The CQA/QC Monitor shall venfy that patches are not cut with the repair sheet in contact with the geomembrane and that the patches are extrusion welded to the geomembrane and then vacuum tested The result of the vacuum test for the repair shall be marked by the Contractor s QC Technician with the date of the test and name of the tester on the sheet Holes less than a quarter of an inch may be sealed with extrudate as descnbed in the Specifications The CQA/QC Monitor shall record all repair areas on the repair log form

5 14 Geomembrane Final Walk through

The Contractor shall be responsible for maintaining the geomembrane (or portions thereof) until final acceptance by the CQA/QC Monitor The CQA/QC Monitor shall recommend final acceptance when all seams have passed destructive testing the Contractor has supplied all documentation and all field and laboratory testing is complete and satisfactory Prior to final acceptance the Contractor CQA/QC Officer CQA/QC Monitor and the Company shall review the installation of the geomembrane (or portions thereof) for completeness Any areas that are found to deviate from the intended design are incomplete or in need of repair shall be recorded by the CQA/QC Monitor for correction by the Contractor When all repairs have been completed the CQA/QC Monitor shall release the geomembrane (or portions thereof) for installation of overlying matenals

The contractor shall retain ownership of the liner throughout the installation of overlying matenals as defined within his scope of work and unfil the project is complete

6 Geocomposite Quality Assurance

6 1 General

This section sets forth the requirements for the CQA/QC testing and observation requirements for installing the geocomposite detailed on the Drawings and Specifications The Contractor shall furnish submittals in compliance with this manual and conditions of warranty prior to construction for review by the CQA/QC Officer and CQA/QC Monitor He shall also prepare and submit a time schedule for installation including complete testing and acceptance of materials prior to construction

6 2 Geocomposite Shipping and Handling

The Contractor shall provide a copy of the certificate of compliance and the QC certificates for production of each geocomposite roll manufactured for this project prior to construction for review by the CQA/QC Monitor and CQA/QC Officer Materials shall be delivered to the site only after the CQA/QC Consultant or the Company receives reviews and approves the required submittals

The CQA/QC Monitor shall ensure that the materials were packaged and shipped by appropriate means so that no damage was caused to the materials delivered to the site Off-loading shall be done in the presence of the CQA/QC Monitor and any damage during off-loading shall be documented by the CQA/QC Monitor and the Contractor The CQA/QC Monitor shall keep a log of all geocomposite delivered to the site on a geocomposite receiving log form

Damaged materials shall be separated from undamaged materials until the CQA/QC Monitor determines proper disposition of material Final authority on the determination of damage shall be the CQA/QC Monitor The Contractor shall replace damaged or unacceptable material at no cost to the Company

The geocomposite shall be stored on a prepared surface approved by the CQA/QC Monitor and shall be protected from puncture precipitation dirt grease water mechanical abrasions excessive heat ultraviolet light exposure or other damage The CQA/QC Monitor shall observe that the Contractor uses appropriate handling equipment to load move or deploy the material to ensure that no damage is caused to the materials during handling of the geocomposite

6 3 Geocomposite Conformance Testing

After delivery or at point of manufacture the CQA/QC Monitor shall obtain one geocomposite sample per 100 000 square feet delivered The CQA/QC Monitor shall identify the roll numbers of the geocomposite which are tested for conformance on the log of geocomposite received form The samples shall be delivered to the geosynthetics laboratory to determine that the geocomposite properties conform to the requirements given in the Specifications The CQA/QC Monitor shall review all test results and report any non-conformance test results to the Contractor and the CQA/QC Officer

The CQA/QC Monitor shall collect samples for conformance testing across the entire width of the roll but shall not include the first three feet of the roll The conformance samples shall be three feet wide by the roll width in length The CQA/QC Monitor shall mark on each roll the Manufacturer s name product identification lot number roll number and roll dimensions

The Contractor shall provide the personnel and equipment to obtain the sample in the presence of the CQA/QC Monitor The geosynthetics laboratory shall conduct the following conformance test on the geocomposite

- Transmissivity (ASTM D 4716) and
- Ply Adhesion (GRI GC7)

6 4 Geocomposite Installation

The CQA/QC Monitor shall not allow installation of the geocomposite until all conformance testing has been completed and passing results have been obtained During geocomposite placement the CQA/QC Monitor shall

- Observe the geocomposite as it is deployed and record all defects and disposition of the defects (panel rejected patch installed etc)
- Observe that people working on the geocomposite do not engage in activities that could damage it
- Verify that the geocomposite is anchored to prevent movement by the wind (the Contractor is responsible for any damage resulting to or from wind blown geocomposite)
- Observe that the seams are overlapped and seamed in accordance with the project Specifications
- Observe that the Contractor has repaired any holes or tears in the geocomposite and
- During installation the Contractor and CQA/QC Monitor shall inspect the geocomposite as it is deployed for the presence of foreign materials and needles

If any needles or other materials which the CQA/QC Monitor feels may be detrimental to the synthetic liner are present within the geotextile component of the geocomposite the roll shall be rejected and shipped off-site permanently and the Contractor shall replace any rejected material at no additional cost to the Company The CQA/QC Monitor shall notify the Contractor of any problem areas and observe and inspect the repair The CQA/QC Monitor shall record all of the above information on log sheets and in daily reports

6 5 Geocomposite Acceptance

The Contractor shall be responsible for maintaining the geocomposite (or portions thereof) until final acceptance by the CQA/QC Monitor The CQA/QC Monitor shall recommend final acceptance when all seaming has been completed the Contractor has supplied all documentation and all laboratory testing is complete and satisfactory Prior to final acceptance the Contractor CQA/QC Monitor and the Company (if necessary) shall review the installation of the geocomposite (or portions thereof) for completeness Any areas that are found to deviate from the intended design are incomplete or in need of repair shall be recorded by the CQA/QC Monitor for correction by the Contractor When all repairs have been completed the CQA/QC Monitor shall release the geocomposite (or portions thereof) for installation of overlying materials

The Contractor shall retain ownership of the geocomposite throughout the installation of overlying materials as defined within his scope of work and until the project is complete

7 Geotextile Quality Assurance

7 1 General

This section sets forth the requirements for the CQA/QC testing and observation requirements for installing the geotextile detailed on the Drawings and Specifications The Contractor shall furnish submittals in compliance with this manual and conditions of warranty prior to construction for review by the CQA/QC Officer and CQA/QC Monitor The Contractor shall also prepare and submit a time schedule for installation including complete testing and acceptance of materials prior to construction

7 2 Geotextile Shipping and Handling

The Contractor shall provide a copy of the certificate of compliance and the QC certificates for production of each geotextile roll manufactured for this project prior to construction for review by

the CQA/QC Monitor and CQA/QC Officer Matenals shall be delivered to the site only after the CQA/QC Consultant or the Company receives reviews and approves the required submittals

The CQA/QC Monitor shall ensure that the matenals were packaged and shipped by appropnate means so that no damage was caused to the matenals delivered to the site Off-loading shall be done in the presence of the CQA/QC Monitor and any damage dunng off-loading shall be documented by the CQA/QC Monitor and the Contractor The CQA/QC Monitor shall keep a log of all geotextile delivered to the site on a geotextile receiving log form

Damaged matenals shall be separated from undamaged matenals until the CQA/QC Monitor determines proper disposition of matenal Final authority on the determination of damage shall be the CQA/QC Monitor The Contractor shall replace damaged or unacceptable matenal at no cost to the Company

The geotextile shall be stored on a prepared surface approved by the CQA/QC Monitor and shall be protected from puncture precipitation dirt grease water mechanical abrasions excessive heat ultraviolet light exposure or other damage The CQA/QC Monitor shall observe that the Contractor uses appropnate handling equipment to load move or deploy the matenal to ensure that no damage is caused to the matenal dunng handling of the geotextile

7 3 Geotextile Conformance Testing

After delivery or at point of manufacture the CQA/QC Monitor shall obtain one geotextile sample per 100 000 square feet delivered The CQA/QC Monitor shall identify the roll numbers of the geotextile which are tested for conformance on the log of geotextile received form The samples shall be delivered to the geosynthetics laboratory to determine that the geotextile properties conform to the requirements given in the Specificafions The CQA/QC Monitor shall review all test results and report any non-conformance test results to the Contractor and the CQA/QC Officer

The CQA/QC Monitor shall collect samples for conformance tesfing across the entire width of the roll but shall not include the first three feet of the roll The conformance samples shall be three feet wide by the roll width in length The CQA/QC Monitor shall mark on each roll the Manufacturer s name product identification lot number roll number and roll dimensions

The Contractor shall provide the personnel and equipment to obtain the sample in the presence of the CQA/QC Monitor The geosynthetics laboratory shall conduct the following conformance test on the geotextile

- Grab strength (ASTM D4632)
- Mass Per unit area (ASTM D5261)
- Permittivity (ASTM D4491)
- Puncture Resistance (ASTM D4833) and
- Trapezoidal Tear (ASTM D4533)

7 4 Geotextile Conformance Installation

The CQA/QC Monitor shall not allow installafion of the geotextile until all conformance testing has been completed and passing results have been obtained Dunng geotextile placement the CQA/QC Monitor shall

- Observe the geotextile as it is deployed and record all defects and disposition of the defects (panel rejected patch installed etc)
- Observe that equipment used does not travel on or damage the underlying geomembrane
- Observe that people working on the geotextile do not engage m activities that could damage it
- Verify that the geotextile is anchored to prevent movement by the wind (the Contractor is responsible for any damage resulting to or from wind blown geotextile)
- Observe that the seams are overlapped and seamed in accordance with the project Specifications

- Observe that the Contractor has repaired any holes or tears in the geotextile
- During installation the Contractor and CQA/QC Monitor shall inspect the geotextile as it is deployed for the presence of foreign materials and needles

If any needles or other materials which the CQA/QC Monitor feels may be detrimental to the underlying synthetic liner are present within the geotextile the roll shall be rejected and shipped off-site permanently and the Contractor shall replace any rejected material at no additional cost to the Company The CQA/QC Monitor shall notify the Contractor of any problem areas and observe and inspect the repair The CQA/QC Monitor shall record all of the above information on log sheets and in daily reports

7 5 Geotextile Acceptance

The Contractor shall be responsible for maintaining the geotextile (or portions thereof) until final acceptance by the CQA/QC Monitor The CQA/QC Monitor shall recommend final acceptance when all seaming has been completed the Contractor has supplied all documentation and all laboratory testing is complete and satisfactory Prior to final acceptance the Contractor CQA/QC Monitor and the Company (if necessary) shall review the installation of the geotextile (or portions thereof) for completeness Any areas that are found to deviate from the intended design are incomplete or in need of repair shall be recorded by the CQA/QC Monitor for correction by the Contractor When all repairs have been completed the CQA/QC Monitor shall release the geotextile (or portions thereof) for installation of overlying materials

The Contractor shall retain ownership of the geotextile throughout the installation of overlying materials as defined within his scope of work and until the project is complete

8 Work Deficiencies

When deficiencies are discovered the CQA/QC Monitor shall immediately determine the nature and extent of the problem notify the Contractor of the problem and complete the required documentation The CQA/QC Monitor shall notify the Contractor within 1/2 hour of discovering any deficiency or at the earliest time possible If the deficiency will cause significant construction delays or require substantial rework the CQA/QC Monitor shall notify the Company and the CQA/QC Officer

The Contractor shall correct the deficiency to the satisfaction of the CQA/QC Monitor If the Contractor is unable to correct the problem the CQA/QC Monitor shall be asked to develop and recommend a solution to the CQA/QC Officer for his approval

The corrected deficiency shall be retested before the Contractor performs additional work All retests and the steps taken to correct the problem shall be documented by the CQA/QC Monitor on a field construction inspection report and on construction problem and solution data sheet forms

9 Documentation

9 1 Daily Records

At a minimum daily records shall consist of field notes a summary of the daily construction activities associated testing activities and observation and data sheets All project records shall be maintained in a well organized project file at the job site and shall be available for review by the CQA/QC Officer Contractor the Company and jurisdictional agencies at all times The CQA/QC Officer shall review the reports and field notes prepared by the CQA/QC Monitor Daily reports shall be provided to the regulating agency within two working days The CQA/QC

Monitor's daily summary report shall be available to the CQA/QC Officer and the Contractor for review and shall include the following information

- Date project name and location
- Weather data
- A description of on-going construction
- A summary of test results identified as passing failing or in the event of a failed test retests
- Off-site materials received including geosynthetics or drainage materials plus status of certificates or off-site testing for the materials
- A summary of decisions regarding acceptance of the work and/or corrective actions taken and
- The signature of the CQA/QC Monitor

9 2 Observation and Test Data Sheets

The CQA/QC Monitor shall prepare observation and data sheets during all phases of construction of the liner system for review by the CQA/QC Officer Observation and data sheets for this project may include but may not be limited to the following

- Field Construction Inspection Reports
- Nuclear Field Density Data Sheets
- Field Density Summary
- Soil Laboratory Test Data Sheet (Sieve Proctor and Moisture Content)
- Acceptance of Prepared Liner Subgrade Forms
- Log of Geomembrane Received
- Log of Geocomposite Received
- Log of Geotextile Received
- Log of Piping Received
- Geomembrane Field Seaming and Non-destructive Test Log
- Geomembrane Panel Deployment Log
- Geomembrane Start-up Tnal Weld Log
- Geomembrane Panel Acceptance Form
- Geomembrane Repair Log
- Geomembrane Destructive Seam Strength Test Results and
- Photograph Log

Additional observation and data sheets may be required All entnes shall be clear and legible All documentation should be dated and signed or initialled clearly by the CQA/QC Monitor

9 3 Weekly Progress Reports

The CQA/QC Monitor shall prepare a weekly progress report summanzing the construction quality assurance activities for the preceding penod The CQA/QC Officer shall review the daily reports and summanes of observation and data sheets in addition to the weekly progress reports The CQA/QC Officer shall discuss progress and the results of all testing and CQA/QC observafion and documentation with the CQA/QC staff to ensure that the constmction is of excellent quality Weekly progress reports shall be provided to the regulafing agency within two days of the end of the constmction week

9 4 Design Change Reports

Design and specification changes may be required dunng constmction In such cases procedures outlined in Section **3** shall be followed Documentation of design changes shall be included in the final report

9 5 Construction Difficulty Reports

In the event that the Contractor has extreme difficulty in the performance of any specified activities required a special report shall be prepared to address the problem(s) The Company the Contractor CQA/QC Monitor and CQA/QC Officer and Designer (if needed) shall meet to discuss any problems encountered and to address the solution If changes to the construction Specifications are required the CQA/QC Consultant UDSHW and the Company shall be notified and approve any changes in writing

9 6 Final Report

At the completion of the project the CQA/QC Consultant shall prepare a final construction documentation report suitable for presentation to the Utah Department of Environmental Quality Copies of all reports and test results prepared by the CQA/QC Monitor shall be submitted to the CQA/QC Officer for review Copies of all the documents shall be maintained at the CQA/QC Consultant s office This report shall verify that the work has been performed in compliance with the Drawings and the Specifications At a minimum this report shall contain

- A summary of all construction activities
- All test results
- All logs forms and reports
- A descnption of significant construction problems and the resolution of these problems
- A list of changes (if any) from the Drawings and Specifications and the justification for these changes and
- A statement signed and sealed by a professional civil engineer registered in the State of Utah venfying that the project was constructed in general accordance with the Drawings and Specificafions

9 7 As-Built Drawings

A set of as-built or record drawings shall be prepared by the Contractor dunng the course of construction as required by the Specifications The as built drawings shall accurately locate all constmction items including the locafion of piping and the extent of lining and collecfion system components etc This informafion shall be included into the Final Constmction Documentation Report

Appendix A – CQA Forms

APPENDIX A
CQA FORMS

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MEETING MINUTES

PROJECT NAME _____ DATE OF MI _____

PROJECT NO _____ PREPARED _____

MEETING NAME _____

ATTENDANCE	NAME	ORGANIZATION
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

SUBJECTS

Prepared By Title Date

Reviewed By Title Date

Ausenco Vector

DAILY CONSTRUCTION FIELD REPORT

Project Name	Project No	Daily Field Report Sequence Number	
Location of Work	Client Or Manager	Date	Day of The Week
General Contractor	Liner Contractor	Project Engineer	
General Foreman	Liner Superintendent	Other	
Source and Description of Fill Material	Weather	CQA Technician	
Equipment on site			

NOTES (Describe work completed during the day, any problems and their solutions)

Prepared By _____ Title _____ Date _____

Reviewed By _____ Title _____ Date _____

Ausenco Vector

WEEKLY CONSTRUCTION FIELD REPORT

Project Name	Project No	Weekly Field Report Sequence Number	
Location of Work	Client Or Manager	Date Penod	
General Contractor	Liner Contractor	Project Engineer	Reviewed By
General Foreman	Liner Supenntendent	Other	
Source and Descnption of Fill Matenal	Weather	CQA Technician	
Equipment on site			

NOTES (Describe construction and CQA completed during the week)

Prepared By _____ Title _____ Date _____

Reviewed By _____ Title _____ Date _____

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CORRECTIVE ACTION FORM

Project Name _____
Project No _____
Date _____

Description of Non Conformance _____

_____

_____

_____

_____

_____

Cause of Non Conformance _____

_____

_____

_____

Suggested Corrective Action _____

_____

_____

_____

_____

Corrective Action Taken _____

_____

_____

_____

_____

Prepared By _____ Title _____ Date _____

Reviewed By _____ Title _____ Date _____

AusenCo Vector

GEOSYNTHETIC RECEIVING AND MANUFACTURING/CONFORMANCE LOG

(one type of material per sheet)

Project Name ______________________ Material Type ______________________

Project No ______________________ Review by ______________________

Receiving Date	Production Date	Shipping Date	Lot Number	Roll Number	Sheet Area (sf)	MQC Received Date	MQC Results (P/F)	CQA Conformance Test Date Ship (or NP if not perform)	Conformance Results (P/F or NA)	Approved for Installation (Y/N)	Storage Location

Prepared By Title Date

Reviewed By Title Date

4/23/03 Rev 0
G-1

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PREPARATORY MEETING

PROJECT NAME	_____	DATE OF MEETING	_____
PROJECT NO	_____	PREPARED BY	_____

SUBJECT _____ SPECIFICATION NO _____

ATTENDANCE	NAME	ORGANIZATION
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____

SUBJECTS

REVIEW OF SPECIFICATIONS (construction requirement and materials/products)

CONTRACTOR S WORKPLAN (scheduling/coordination and method of construction)

CONTRACTOR S QUALITY CONTROL

CQA PLAN (test procedure manpower and equipment)

NOTE

Prepared By	Title	Date
Reviewed By	Title	Date

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SUBGRADE ACCEPTANCE FORM

Project Name

Location

Installer Name

Area To Be Accepted

I THE UNDERSIGNED, DULY AUTHORIZED REPRESENTATIVE OF THE INSTALLER DO HEREBY ACCEPT THE SUBGRADE SURFACE CONDITION AND SHALL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY AND SUITABILITY IN ACCORDANCE WITH THESE SPECIFICATIONS FROM THIS DATE TO COMPLETION OF THIS INSTALLATION I DO NOT ACCEPT ANY RESPONSIBILITY FOR THE CONDITIONS OR CHARACTER OF THE SUBSURFACE SOIL

NAME (PRINT)	SIGNATURE	TITLE	DATE

WITNESSED BY VECTOR ENGINEERING, INC

NAME (PRINT)	SIGNATURE	TITLE	DATE

Prepared By _____ Title _____ Date _____

Reviewed By _____ Title _____ Date _____

Ausenco Vector

GEOMEMBRANE REPAIR LOG

Project Name _____ Material Type _____

Project No _____ [ ] Primary [ ] Secondary [ ] Other

Repair #	Seam/ Panel	Location	Description	REPAIR			TEST			
				Date	Equip #	Operator	Date	Type*	Pass/ Fail	CQA Monitor

*VT VACCUM TEST
SP SPARK TEST
AL AIR LANCE

Prepared By _____ Title _____ Date _____

Reviewed By _____ Title _____ Date _____

Ausenco Vector

PANEL DEPLOYMENT LOG

Project Name _____
Project No _____

Material Type _____
[ ] Primary [ ] Secondary [ ] Other

Date	Panel No	Roll No	Wind	Dimensions (L X W)	Area (FT^2)	Location	Remarks

Prepared By _____ Title _____ Date _____ TOTAL THIS PAGE _____ SF

Reviewed By _____ Title _____ Date _____ CUMULATIVE TOTAL _____ SF

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START-UP(TRIAL) WELD LOG

Project Name _____ Project No _____

Matenal _____ [ ] Primary [ ] Secondary [ ] Other

Sample	Date	Time am/pm	Operator Name	Machine No	Extrusion/ Fusion	Temp	Speed	Amb Temp	Peel	Shear	Failure Mode	Pass/ Fail

Minimum Requirements

Prepared By _____ Title _____ Date _____ Peel _____ ppi

Reviewed By _____ Title _____ Date _____ Shear _____ ppi

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GEOMEMBRANE SEAMING LOG

Project Name _____
Project No _____

Material Type _____
[ ] Primary [ ] Secondary [ ] Other

Weld Date	Seam No	Seam Length (ft)	Cumm Length (ft)	Time am/pm	Operator Name	Machine			Amb Temp	Test Date	Test Type[1]	Pressure (psi)	Time (min)	Results P/F	CQA Monitor	Remarks
						No	Temp	Speed								

Note 1 AT Air Test
ST Spark Test
VT Vacuum Test

Prepared By _____ Title _____ Date _____
Reviewed By _____ Title _____ Date _____

Table 1 LIST OF FORMS FOR CQA DOCUMENTATION

Form No	Title	Description/Purpose
C - 1	Meeting Minutes	Record Weekly Construction and Special
C - 2	Daily Field Report	Record daily construction and CQA activities
C - 3	Weekly Field Report	Summary of weekly construction and CQA
C - 4	Corrective Action Form	Record construction and CQA vanance
C - 5	Preparatory Meeting	Record preparatory meeting for each work
S - 1	Master Soils Testing Log	Record all incoming samples and test results
S - 2	Moisture Content	Lab form for moisture test (microwave and
S - 3	Summary of Moisture Content Correlation	Correlate Moisture Results by microwave, oven, and nuclear gauge
S - 4	Moisture Density Summary	Field form to record all moisture density test by nuclear method
S - 5	Field Density by Sandcone Method	Record all sandcone tests for nuclear gauge correlation
S - 6	Summary of Density Correlation	Correlate wet density results by sandcone and nuclear gauge
S - 7	Equipment Calibration - Sand Density	Lab form of sand calibration for sandcone test
S - 8	Moisture/Density	Laboratory worksheet for Proctor test
S - 9	Particle Size Analysis	Laboratory worksheet/data check for gram size test
S - 10	Atterberg Limits	Laboratory worksheet for liquid and plastic limits
G - 1	Geosynthetic Receiving and Manufactunng/Conformance Loq	Summary of receiving, MQC, and conformance data for geosynthetic matenal
G - 2	Subgrade Acceptance Form	Record that subgrade are accepted by others for placement of succeeding matenals
G - 3	Panel Deployment Log	Information regarding panel deployment for as-built purposes
G - 4	Start-up (tnal) weld log	Record the welding equipment pnor use
G - 5	Geomembrane Seaming Log	Record of seam data including non-destructive test information
G - 6	Geomembrane Repair Log	Record of repair and testing of repair
G - 7	Bonded Seam Strength Test Results - Destructive Samples	Data of destructive testing sample including sample collection log and test results

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MASTER SOILS TESTING LOG

Project Name ______________________ Review by ______________

Project No ______________________

Sample No	Date Sampled	Moisture Content microwave w_m (D4643)	Moisture Content Oven w_o (D2216)	Atterberg Limits LL PI (D4318)	Particle Size (-#200) (D422)	Modified Proctor DD_{max} W_{opt} (D1557)	Constant Head Permeability k (D2434)	Test Results	Notes

Prepared By	Title	Date	
Reviewed By	Title	Date	

4/23/03 Rev 0
S 1

Test Requested

MOISTURE CONTENT

Ausenco Vector

Project Name _____ **Test By** _____

Project Number _____ **Check By** _____

Date									
Test No									
Test Method M *microwave*									
O *Oven*									
Tare No									
Tare mass (g)									
Tare + Wet Soil mass (g)									
Tare + Dry Soil mass (g)									
Weight of Water (g)									
Dry Soil mass (g)									
Water Content (%)									
Notes									
Date									
Test No									
Test Method M *microwave*									
O *Oven*									
Tare No									
Tare mass (g)									
Tare + Wet Soil mass (g)									
Tare + Dry Soil mass (g)									
Weight of Water (g)									
Dry Soil mass (g)									
Water Content (%)									
Notes									

Prepared By Title Date

Reviewed By Title Date

Ausenco Vector

SUMMARY OF MOISTURE CONTENT CORRELATION

Project Name ____________________ **Review by** ____________

Project No ____________________

Nuclear Gauge		Oven		Microwave		Remarks
Test No	Moisture (%)	Test No	Moisture (%)	Test No	Moisture (%)	

Prepared By	Title	Date
Reviewed By	Title	Date

BONDED SEAM STRENGTH TEST RESULTS DESTRUCTIVE SAMPLES

Project Name ______________________ Material Type ______________________

Project No ______________________ Review by ______________________

Date	Sample No	Seam No	Comments	Peel Test Minimum ppi										Shear Test Minimum ppi									
				Coupon 1		Coupon 2		Coupon 3		Coupon 4		Coupon 5		Coupon 1		Coupon 2		Coupon 3		Coupon 4		Coupon 5	
				A/B	Failure Mode	A/B	Failure Mode	A/B	Failure Mode	A/B	Failure Mode	A/B	Failure Mode		Failure Mode	Shear	Failure Mode	Shear	Failure Mode	Shear	Failure Mode	Shear	Failure Mode

Prepared By Title Date

Reviewed By Title Date

Ausenco Vector

SUMMARY OF DENSITY CORRELATION
(SAND CONE vs GAUGE)

Project Name ______________

Project No ______________

Sand Cone Test No	Nuclear Gauge Test No	Sand Cone Wet Density (pcf)	Nuclear Gauge Wet Density (pcf)	Difference (+/)	Remarks

Prepared By Title Date

Reviewed By Title Date

Ausenco Vector
143E Spring Hill Dr Grass Valley CA 530-272 2448
LABORATORY SERVICES

EQUIPMENT CALIBRATION
WORKSHEET / RECORD
SAND DENSITY

CONTROL NO

VECTOR IDENTIFICATION NO

Calibration Date | Next Due Date

Calibration Procedure No CB- 1 15

Equipment or Standards Used for Calibration

Scale or Balance No _____ Last Calibration Date _____

Unit Wt Bucket No _____ Last Calibration Date _____

Unit Wt Bucket Vol (x) _____ cm^3

Procedure

Vector determines the density (mass / vol) of sand used for calibration of Sand Cone Devices and used for determining the volume of holes for ASTM D-1556 by pounng the sand into a calibrated Unit wt bucket with a known volume

Calibration

Detailed calibration procedures can be found in the Calibration Manual See the referenced CB number

Trial No	Mass of Sand and Bucket g (a)	Mass of Bucket g (b)	Mass of Sand g (a-b) = c	SAND DENSITY g / cm^3 (c / x)
1				
2				
3				

Test temperature C _____ Average = _____ g/cc _____ pcf

Note The above individual tnals shall agree within 1% of the average Temperature shall be 20° +/- 2° C

Source of Sand _____ Type of Sand _____

Date Purchased _____

Performed By Title Date

Reviewed By Title Date

(1/10 ft = 2831 7cm^3) (1/3 ft = 9439cm^3) (1/2 ft = 14158cm^3)

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MOISTURE - DENSITY SUMMARY

Project Name _____

Project Number _____ Review By _____

Test Date										
Test No										
Northing or Grid No										
Easting or Grid No										
Elevation or Lift No										
Soil Information										
Sample No										
DD max (pcf)										
Optimum Moisture (%)										
Field Testing Data										
Test/Source Depth in										
Density Count DC										
Moisture Count, MC										
Wet Density (pcf)										
Moisture Content (%)										
Dry Density (pcf)										
% Comp										
Specification										
% Comp										
Moisture Content (%)										
P/F										
Density Standard DS										
Moisture Standard MS										
Remarks/retest										

Prepared By _____ Title _____ Date _____

Reviewd By _____ Title _____ Date _____

FIELD DENSITY BY SANDCONE METHOD

Project Name _____ Test By _____

Project Number _____ Check By _____

Date									
Test No									
Corresponding Nuclear Test No									
Sand Density (g/cm^3)									
Volume of Cone (cm^3)									
Weight of Sand in Cone									
DENSITY									
Tare No									
Tare Weight (g)									
Tare + Wet Soil (g)									
Wet Soil Mass (g)									
Cone + Sand Initial (g)									
Cone + Sand Final (g)									
Sand Used (Gross) (g)									
Sand Used (Net) (g)*									
Volume of Hole (cm^3)**									
Wet Density (pcf)***									
WATER CONTENT									
Tare No									
Tare mass (g)									
Tare + Wet Soil mass (g)									
Tare + Dry Soil mass (g)									
Weight of Water (g)									
Dry Soil mass (g)									
Water Content (%)									
Notes									

*Sand Used (Net) = Sand Used (Gross) - Weight of Sand in Cone

** Volume of hole = (Sand Used (net) / sand density)

*** Wet Density = (Wet Soil Mass/Volume of Hole) x 62 4 pcf

Prepared By Title Date

Reviewed By Title Date

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143E Spring Hill Drive Grass Valley CA 95945 (530) 272 2448
LABORATORY SERVICES

ATTERBERG LIMITS

Laboratory Worksheet

ASTM D-4318

Client | Project No | Lab Sample No

ect Name | Sample ID | Report Date

LIQUID LIMIT DETERMINATION

TRIAL NOS	1	2	3	4	5
Date / By					
Tare Number					
Wet mass soil & tare g					
Dry mass soil & tare g					
Tare mass g					
Mass of water g					
Mass of dry soil g					
WATER CONTENT %					
NUMBER of BLOWS					
Visual Descnption					

PLASTIC LIMIT DETERMINATION

TRIAL NOS	1	2	3
Date / By			
Tare Number			
Wet mass soil & tare g			
Dry mass soil & tare g			
Tare mass g			
Mass of water g			
Mass of dry soil g			
WATER CONTENT %			
Average Water Content %			

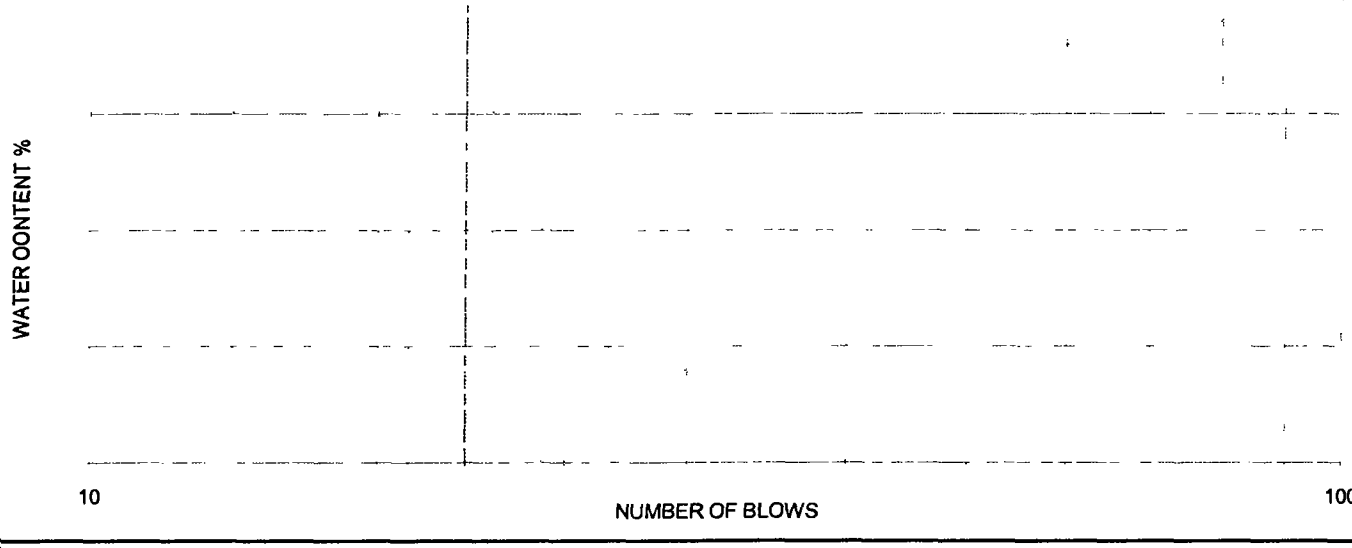
RESULTS

LIQUID LIMIT

PLASTIC LIMIT

PLASTIC INDEX

LIQUID LIMIT FLOW CURVE



Prepared By | Title | Date

Reviewed By | Title | Date

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LABORATORY SERVICES

MOISTURE / DENSITY RELATIONSHIPS

LASORATORY WORKSHEET

Prep Date

Lab Log No

CLIENT NAME

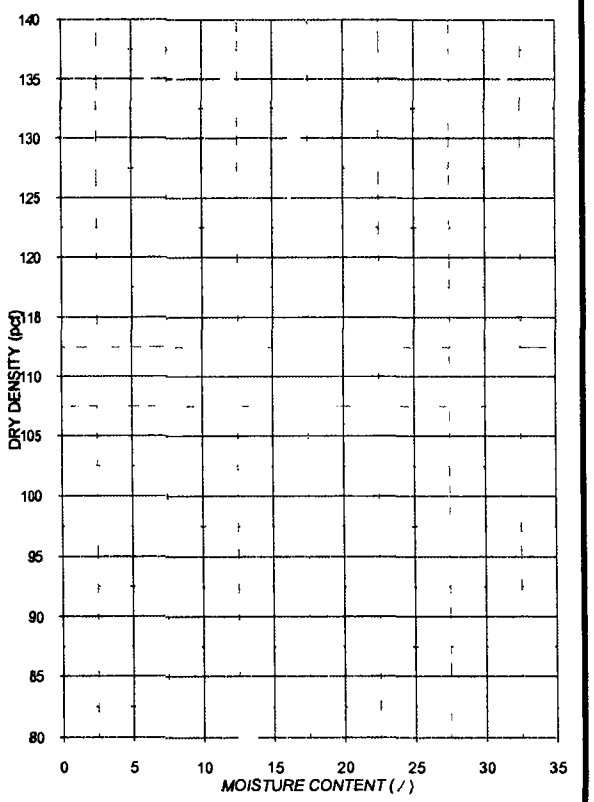
PROJECT NAME PROJECT NO

SAMPLE IDENTIFICATION

SOIL DESCRIPTION

TEST STANDARD circle one

ASTM D- 698 or 1557



SAMPLE PREPARATION		TOTAL	+ 3/4	+ 3/8	+ # 4	pan (- # 4)
Individual Mass Retained	g					
Individual Percent Retained	%	100%				
Corr - 3/4 Specimen Mass	g		-			
Corr 3/4 Specimen Percent	%	100%	-			
Prepared Specimen Mass	g	2500 / 5000	<- Circle one			
Prepared Specimen Percent	%	100%	-			

METHOD* ☐ A <20% on #4 B >20% on # 4 & < 20% on 3/8" ☐ C >20% on 3/8" & <30% on 3/4"

COMPACTION TEST PT	1	2	3	4	5	6
Water Adjustment						
Mold + Wet Soil g						
Mold g						
Wet Soil g						
Factor* (4"/ 6" mold)	06614 / 02939	06614 / 02939	06614 / 02939	06614 / 02939	06614 / 02939	06614 / 02939
Wet Density (pcf)						
Notes Dry Pumping Free Water						
DATE / BY						
Oven / Microwave	☐ oven ☐ micro	☐ oven ☐ micro	☐ oven ☐ micro	☐ oven ☐ micro	☐ oven ☐ micro	☐ oven ☐ micro
Tare Name						
Tare + Wet Soil g						
Tare + Dry Soil g						
Tare Mass g						
Water Mass g						
Dry Soil Mass g						
Water Content (%)						
Dry Density (pcf)						

OPTIMUM WATER CONTENT, %

MAXIMUM DRY DENSITY, pcf

*For Method A and B,(4") multiple by (1/30 cu ft factor - .06614) For Method C,(6") multiply by (1/13 cu.ft. factor - .02939)

NOTES

LABORATORY SAMPLE NO

L Labexcel \ Projects \ 19 \ \ -cmp xls

Tested By &Title Date Entered By Checked By

Prepared By Title Date

Reviewd By Title Date

DON CMP-rp (rev 3/19/02)

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143E Spring Hill Dr Grass Valley CA 530-272 2448
LABORATORY SERVICES

PARTICLE SIZE ANALYSIS

LABORATORY WORKSHEET
ASTM - 422

Client / Project Name _____ Project No _____

Sample Id _____

SAMPLE WEIGHTS		Total Sample Mass	Split Sieve Moisture Content (Optional)	Split Sieve Sieved Sample	CALCULATIONS	
Date / By						
Tare No or Name						
Tare + Wet Soil Mass	g					
Tare + Dry Soil Mass	g					
Tare Mass	g					
Wet Soil Mass	g					
Water Mass	g				# 200 check calculation	
Dry Soil Mass	g				Dry <u>washed</u> soil & tare mass	
Water Content	%				+ # 200 washed soil mass	
Total Dry Soil Mass	g				The above mass of +# 200 soil should be app = to below	

SIEVE ANALYSIS

STANDARD SIEVE ☐ <—— CHECK ONE ——> SPLIT SIEVE ☐ & SIEVE SIZE _____

Checked Sieves	Sieve Size	Particle Size (mm)	Individual Mass Retained	Cumulative Mass Retained	Individual Percent Retained	Cumulative Percent Retained	Cumulative Percent Passing	Comments
	4 0	101 6						
	3 0	76 2						
	2 0	50 8						
	1 5	38 1						
	1 0	25 4						
	0 75	19 1						
	0 50	12 7						
	0 375	9 5						
	#4	4 5						
	#8	2 36						
	#10	2 00						
	#16	1 18						
	#20	0 85						
	#30	0 60						
	#40	0 425						
	#50	0 300						
	#100	0 150						
	#200	0 075	should agree w/ above >					
	Pan							
	Total							

Prepared By _____ Title _____ Date _____

Reviewed By _____ Title _____ Date _____

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Appendix D –Operations & Maintenance Plan

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Environment & Sustainability

Wasatch Regional Landfill, Inc.

Wasatch Regional Landfill Liquid Waste Pond Operations & Maintenance Plan June 2, 2010

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Contents

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1 Introduction

The intent of this document is to provide guidance to follow for the operations and maintenance of the new liquid waste pond at the Wasatch Regional Landfill

The new pond is located to the north of the future Phase 3 of the landfill and to the east an existing road The pond is approximately 1 1 acre in size and 6-feet deep It is anticipated that the pond will provide 2-feet of freeboard and 4-feet on liquid waste storage This will give the pond an operating capacity of 1 597 000 gallons with an ultimate capacity of 2 286 100 gallons The new ponds range from 8 feet below to 10 feet above the existing site grade The existing grade slopes gradually to the northeast from approximately 4 284 feet to 4 268 feet above mean sea level (msl) A double liner system consisting of 60 mil double sided textured HDPE geomembrane will be installed on the floor and the interior side slopes of the pond which was graded at 2H 1V (horizontal to vertical)

2 Operations

Operation of the pond shall be in accordance with the operating procedures for the facility Operations around the pond shall be such that no damage occurs to the geomembrane liner Restriction in the pond area shall be as follows

- No heavy vehicles allowed in the pond
- Do not throw any foreign objects into the pond and
- No "hot" work (welding cutting torch etc) shall be performed in the vicinity of the pond

3 Maintenance

This section sets forth the maintenance requirements for the pond There are a number of problems that can occur in a containment area The most common damage to liners is mechanical damage Mechanical damage can occur due to acts of vandalism or day to day operations within the facility Visual inspections can be an effective tool in the maintenance of geomembrane lined containment Visual inspection can find evidence of damage or of pending damage Regular inspection and maintenance of the lagoons will help ensure long term proper function

3 1 Routine Inspection

Routine monthly inspection of the pond shall include a brief visual inspection of the area Inspection shall include but may not be limited to the following

- Liner integrity (rips/tears/environmental degradation)
- Animal intrusion
- Vegetation growth
- Liner anchoring integrity/excessive tension
- Lagoon inlet and outlets free of sediment and debris
- Perimeter fence integrity/personal flotation devices in place and
- Water level

A sample checklist is provided in Attachment 1 Wherever possible notes shall be provided describing current conditions locations of any defects and corrective actions taken

3 2 Special Inspections

Regular inspections shall be made to ensure that there are no leaks in the primary liner layer Inspections of the leak detection layer shall be made on a quarterly basis or sooner as needed As part of this inspection the condition of the riser supports and riser trench shall also be monitored The sample monthly checklist provided in Attachment 1 can be utilized for this inspection also

3 3 Pond Maintenance

In the event sediment and debris builds up within the pond desluding of the pond may be required Extreme care must be taken prior to removal of any material from the pond No heavy equipment or sharp equipment that may potential damage the geomembrane shall be used

If the pond is being drained for liner maintenance or excessive storm water volumes the sediment in the pond will be evaluated and removed if necessary as preventative maintenance Prior to cleaning out the sediment a plan will be developed which will include sediment sampling analysis and removal by a pumping or vacuum system

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Attachment 1 – Monthly Inspection Checklist

WASATCH REGIONAL LANDFILL
LIQUID WASTE POND
MONTHLY INSPECTION CHECKLIST

Date of Inspection
Inspection Performed by

Item No.	Item Description	Pass	Fail	Notes
	Liner Integrity			
1	Free of Rips	☐	☐	
2	Free of Tears	☐	☐	
3	Environmental Degredation	☐	☐	
4	Signs of Stress Caused By Cold Temperature	☐	☐	
	Liner Anchoring			
5	General Integnty	☐	☐	
6	Tension	☐	☐	
	General			
7	Animal Intrusion	☐	☐	
8	Vegetation Growtti	☐	☐	
9	Fence Integnty	☐	☐	
10	Inlets Free of Debns & Sedimentation	☐	☐	
11	Water Level (Minimum 2fi Freeboard)	☐	☐	
	Leak Detection Sump (Quarterly)			
12	Liquid Present	☐	☐	
13	Cap On	☐	☐	
14	Riser Secure to Support Bar	☐	☐	
15	Riser Trench Free of Damage	☐	☐	